A

TREATISE

ON THE

PRACTICE OF MEDICINE.

IN TWO VOLUMES.

BY JOHN EBERLE, M. D.

PROFESSOR OF MATERIA MEDICA AND OBSTETRICKS IN JEFFERSON MEDICAL COLLEGE;
MEMBER OF THE AMERICAN PHILOSOPHICAL SOCIETY, &c. &c.

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Eastern District of Pennsylvania, to wit:

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"A Treatise on the Practice of Medicine. In Two Volumes. By John Eberle, Professor of Materia Medica and Obstetricks in Jefferson Medical College; Member of the American Philosophical Society, &c. &c." Vol. II.

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D. CALDWELL,
Clerk of the Eastern District of Pennsylvania.

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CHAPTER I.

CHRONIC NERVOUS AFFECTIONS.

GENERAL OBSERVATIONS.

The nervous system gives to organized matter all the peculiar functions of animal life, and in its higher states of development renders it a fit recipient for the powers of reason and moral feeling. In a state of health, or freedom from irritation, it qualifies man for the enjoyment and communication of happiness—when disordered, it may render him the most deplorable and abject of created beings. Exalted mental endowments, equanimity, and benevolence, may be converted into imbecility, waywardness, and misanthropy; meek piety, into the wildness and intolerance of fanaticism; confidence, into universal mistrust; and friendship into hatred, by morbid conditions of this component of the human organization.

The chronic diseases of the nervous system may be divided into two classes—viz: 1. Those in which the sensorial or muscular functions are morbidly affected, either separately or conjointly; 2. Those in which the intellectual and moral powers are disordered.

The first of these classes comprehends a great variety of affections—characterized either by a *perversion*, or a *morbid activity*, or *abolition* of one or more of the *sensorial functions;* or by spasm, or convulsion, or paralysis, of a greater or less portion of the *muscular system*.

The examples of singularly *perverted* sensorial function are numerous. Reil mentions a case in which the whole surface of the body was insensible to heat or cold, and incapable by the touch of distinguishing hardness from softness in bodies.

Dufour gives an account of a similar case.* Sauvages relates the case of an individual who always heard two voices, one an octave higher than the other when any one spoke to him. Individuals have lost the power of distinguishing colours; and some have been much harassed by various visual illusions.

Instances of very distressing morbid increase of sensorial power are frequently met with. The sense of hearing has become so exceedingly acute that the weakest sounds gave rise to pain and uneasiness, and the same has been observed with regard to the other sensorial powers. In some cases nervous disorder manifests itself by excruciating pain in some part of the body, as in the various forms of neuralgia.

The sensorial functions may also be weakened or entirely *destroyed*, by affections seated in the nervous system. When such affections are local, one sense alone may be obliterated; but when the disorder implicates the whole of the sensorium commune—the brain—all the sensorial powers will be suspended. This general state of nervous oppression or inactivity is attended with manifest respiration and arterial action, and constitutes what is termed *coma*; a condition which must not be confounded with *syncope*, or *asphyxia*. These latter affections are not accompanied by any perceptible respiratory and arterial actions, and although like coma the immediate consequence of impeded cerebral function, yet they are manifestly dependent on different conditions of the encephalic circulation. The pathology in relation to this subject, however, will be illustrated hereafter.

When the nervous irritation passes upon the muscular system, it gives rise to irregular, spasmodic, or convulsive actions, either in one, or in several, or in the majority of the muscles of the body. These convulsive or spasmodic muscular contractions, are divided by authors into *tonic* and *clonic*. In the former the contractions are permanent, as in tetanus; in the latter they occur in quick alternation, with relaxations, as in hysteria and epilepsy. There exists, however, no essential difference between these varieties of convulsive muscular action. They indeed often occur at the same time in the same individual, some muscles remaining in a state of firm contraction, whilst others are alternately relaxed and contracted. In general, however, convulsions of the *clonic* form are attended with less danger than those of the rigid or *tonic* spasmodic affections. The former are frequently the result of a mere temporary sympathetic irritation of the brain, from causes of a transitory character, or susceptible of being removed; whilst the latter usually depend on a more intimate affection of the nervous system from causes over which we have little or no control. Convulsions, or general spasmodic

* Reil, Fieberlehre, bd. iv. p. 64.

affections of the voluntary muscles, must, therefore, be regarded as the external manifestations of certain morbid actions or conditions of the brain and nerves. The brain is always the immediate source of the muscular irritation; and the violence, duration, character, and extent of the convulsive affection depends on the nature of the cause, and the constitutional habit of the patient. In some instances, the cerebral affection which gives rise to the convulsive muscular contractions is so great as to produce a temporary suspension of consciousness, and of the sensorial functions. In others, as in tetanus and chorea, the mind and sensorial powers remain unaffected until the disease becomes inveterate.

Spasmodic contractions are often confined to one part, and indeed frequently to a single muscle. Of this kind are, tonic spasm of the muscles of the eyes, producing *strabismus;* or convulsive action of these muscles giving rise to rolling of the eyes, (*hippus;*) spasm of the muscles of the lips and face, (*sardrosis, risus sardonicus,*) giving an expression of malignant laughter to the countenance; tonic contraction of the muscles of the jaws (*trismus;*) spasmodic affection of the œsophagus; convulsive action of the diaphragm, producing hiccough (*singultus;*) tonic spasm of the erector muscles of the penis, giving rise to painful, and sometimes protracted *priapism;* tonic or clonic spasmodic contractions of the abdominal muscles;* and other local spasms or cramps of the voluntary muscles, are among the most common affections.

The *involuntary muscles* also are subject to spasmodic affections; but these appear to depend more frequently on some local irritation than upon a reflected cerebral impression. The whole arterial system is sometimes affected with clonic convulsive action. This is particularly apt to occur from sudden and violent mental agitation; from gastric irritation; and from organic affections of the heart, (*angina pectoris, palpitation.*) The stomach, the intestinal tube, the common gall duct, the uretha, uterus, &c. are all particularly liable to painful spasm.

The second class of nervous diseases, those in which the cerebral irritation produces mental derangement, presents a variety of modifications, both in relation to the degree, and the particular character of the hallucination. In some instances, there is a general derangement of all the intellectual faculties, with violent excitement of the passions; occasional exacerbations of raving delirium and agitation, (*mania.*) In other cases, the insanity is only partial—the patient retaining the

* Whytt mentions the case of a young woman who was affected with constant convulsive action of the abdominal muscles during the day, though free from them at night when in bed.

regular powers of his understanding on all but a few, or a single subject, (*monamania.*) Sometimes the reasoning powers become defective or imbecile, and the memory weak or obliterated, (*dementia,*) a state of mind which is most frequently met with in very old people, and in such as have suffered frequently from convulsive affections, as epilepsy, chorea, or apoplexy. In some instances, almost every trace of intellectual power is wanting, either from a congenital defect in the cerebral organization, or from diseases or accidental causes affecting the brain. These varieties of mental disorder sometimes pass into each other, and present an almost infinite diversity in their particular phenomena. They may arise from causes acting directly on the brain, and from impressions conveyed sympathetically to this organ from remote visceral affections. Whatever be the nature of the remote cause, however, insanity of every variety is always the immediate consequence of some peculiar dynamic or organic disorder of the sensorium commune. Under the particular head of these affections, I shall enter more fully into the etiological consideration of this subject.

CHAPTER II.

APOPLEXY.

Apoplexy may be defined, a sudden loss or suspension of the animal functions, with a slow and full pulse, laborious breathing, generally attended with stertor; whilst the organic or vital functions continue with little or no perceptible disturbance.

In some instances, the apoplectic attack comes on suddenly without any precursory indications of its approach. Occasionally, indeed, patients feel unusually well for some time previous to an attack of this affection, and this is most apt to be the case in individuals of a gouty habit. (Richter.) Much more frequently, however, various premonitory symptoms, indicative of cerebral disturbance, precede the attack; and amongst these the following are the most common:—vertigo; a dull and deep-seated pain, or sense of weight in the head, particularly on stooping or suddenly turning the head round; a turgid state of the veins of the head; throbbing of the temporal arteries; ringing in the ears; inability to articulate distinctly; dimness of sight; transient obtuseness of hearing; sparks and flashes of light before the eyes; bleeding of the nose; drowsiness; confusion of ideas, manifested by incoherent talking; disturbed and heavy sleep; loss or unusual weakness of the memory; general sluggishness, both of body and mind; irregular spasmodic contraction of the muscles of the face; and, occasionally, transient pains in the pit of the stomach, and nausea. In some instances, a numbness is felt in the fingers, or in one side of the body shortly before the attack supervenes. In general, the symptoms which announce the approach of an apoplectic attack, indicate an unusual determination of blood to the head. Of these symptoms, however, vertigo, ringing in the ears, dimness of sight, and pain and heaviness in the head, are by far the most common precursors of an attack of this disease.

The duration of these symptoms is extremely various. In some cases, they do not continue more than a few hours before

the attack ensues; in others, they are experienced with occasional remissions or intermissions, for several weeks, or months, and even years. Occasionally, the most alarming of the foregoing symptoms occur and continue for a longer or shorter time, without terminating in an attack of this disease. The premonitory symptoms often become very considerably aggravated immediately before the apoplectic attack supervenes. The fulness, weight, and pain in the head become suddenly very severe; a sense of tension and drawing is felt in the muscles of the back of the neck; and, in some instances, pain in the epigastrium, with nausea, occurs just before the attack.

In some cases, the apoplectic attack comes on by a *sudden* deprivation of all sensorial power and motion; the patient sinking almost instantaneously into a state of profound stupor, resembling deep and heavy sleep, from which it is impossible to rouse him in the slightest degree. This mode of seizure constitutes what authors term *perfect* or *strong apoplexy*, (*apoplexia perfecta, apilepsis, sideratio;*) and generally terminates fatally in a very few hours, and sometimes in less than an hour.

In other cases, the patient is seized with sudden deep-seated pain in the head; tremor of the extremities; confusion of ideas; nausea or vomiting; and vertigo. He then becomes insensible, and sinks down as from syncope; in a short time, however, he recovers sufficiently to converse, and perhaps, to walk about, but still complains of pain and other unpleasant sensations in the head, with confusion of the mind and giddiness. In the course of a few hours, after this temporary recovery, the brain becomes gradually more and more oppressed, until complete insensibility is induced, and the patient lies in a state of deep coma.

Sometimes paralysis of one side suddenly occurs, with loss of speech; pain in some part of the head; slowness and confusion of the mind; and vertigo;—the sensorial functions and consciousness remaining. By degrees, however, the brain becomes more oppressed, and the sensorial powers gradually decline until profound apoplectic stupor ensues.*

In whatever way the apoplectic attack comes on, the following phenomena attend its course, and serve to distinguish it from the other forms of soporose affections. Immediately after the accession of the fit, the pulse and respiration are weak and often scarcely perceptible. Both, however, soon recover from the first shock; the pulse becomes full, slow, regular, and often hard; and the respiration slow, oppressed, interrupted or irregular, and *generally* sterterous. Some writers, indeed, contend

* Abercrombie. Edin. Med. and Surg. Jour. vol. xiv. p. 554.

that in true apoplexy, *sterterous* breathing is invariably present; but this is not confirmed by general experience.* In violent instances, expiration is attended with a puffing motion of the lips, and a frothy saliva is blown out with a sputtering noise. The face is sometimes livid and of a turgid appearance; more frequently, however, it is pale and somewhat bloated. In some instances, the eyes are blood-shot; in others, they are dull, glassy, and fixed, or rolling about in their sockets. In general, the pupils are considerably dilated; but in some cases, they are permanently contracted. Dr. Cook states, that he has seen instances in which the pupils were almost entirely closed.

The extremities are usually below the natural standard of temperature, but the skin about the body, and particularly of the head, is warm. The jaws are generally spasmodically closed; sometimes they remain widely open. The power of swallowing is occasionally, in very violent cases, entirely destroyed; but in most instances, though greatly impeded, it remains to a degree sufficient to enable the patient to swallow small portions of fluids. In all instances, very considerable torpor of the bowels exists; and this is sometimes so great as to resist every effort to evacuate them by cathartic remedies. Clammy sweats usually break out about the head and neck, and the same sometimes occurs on the extremities. In moderate cases, the temperature of the skin, and appearance of the countenance, do not differ from their natural condition; and in such cases, the power of deglutition is generally sufficiently strong to permit the easy administration of medicines by the mouth. This is particularly apt to be the case in what is termed *apoplexia hydrocephalica*, or the apoplectic stage of hydrocephalus. Towards the termination of fatal cases, the pulse becomes small, irregular, and frequent; and the respiration slow, short, and interrupted by long intervals.

If the disease does not end in death, it may terminate:—

1. In the perfect restoration of all the suspended functions, and the enjoyment of good health. This favourable issue may be expected when the various organs gradually resume their respective functions, more especially if consciousness and a command over the voluntary muscles gradually return. The tongue is often the first organ that obeys the commands of volition; after this the upper extremities, then the inferior ones, resume their power of motion; the muscles of the face being in

* I have seen a case of fatal apoplexy, in which the breathing was throughout free from stertor. On post-mortem examination, a coagulum of extravasated blood was found in the centre of the right anterior lobe of the brain, and blood was also effused into the lateral ventricle of that side.

general the last to return to their regular action. Not unfrequently, during the progress of recovery from an attack of apoplexy, general and pretty free perspiration, or diarrhœa, and in some instances active vomiting occurs. Sometimes sanguineous evacuations attend the favourable termination of the disease; such as epistaxis or hæmorrhoidal and menstrual discharges.*

2. In *paralysis of certain parts* of the body, with a restoration of health in all other respects. More or less paralysis, indeed, remains after the majority of apoplectic attacks. In some instances, the palsied muscles soon resume their natural power; in others, they slowly recover a certain degree of power, without however ever regaining their natural state of activity; whilst in some cases little or no perceptible diminution of the paralytic affection ensues—the affected muscles remaining permanently palsied. In most cases in which permanent paralysis is left by an attack of apoplexy, the mind becomes very perceptibly weakened. The power of comprehending complex ideas and the memory are often almost entirely obliterated in persons who recover from a severe apoplectic seizure. Paralysis from apoplexy is usually of the hemiplegiac variety; but in some instances, the palsy is confined to a single member or to certain muscles, more especially to such as derive their nerves immediately from the brain, as those of the face.

3. The apoplectic fit may terminate in a general febrile condition after the sensorial oppression has passed off. In some instances, strong *synochal* fever is developed in proportion as the nervous functions are restored; in others, fever of a *typhoid* character, with manifest gastric irritation, ensues. Several years ago, I was called to a gentleman who a few minutes before had been seized with a fit of strong apoplexy. Under the usual treatment he gradually recovered so as to be able at the end of the fourth day to set up and converse without difficulty. On the next day strong febrile reaction, with a hot and dry skin supervened, and notwithstanding the most vigorous antiphlogistic measures, violent delirium ensued, and continued for several days before it subsided. The patient eventually recovered.

Diagnosis.—The diagnosis of apoplexy is not, in general, attended with difficulty. Where a loss of consciousness of the sensorial functions and voluntary motion suddenly come on, and continue with an active state of the pulse and full respiration, the case must be regarded as apoplexy. From *syncope* and *asphyxia*, this form of soporose disease is distinguished by the absence or almost imperceptible action of the pulse and

* Richter's Specielle Therapie, Bd. viii. p. 711.

respiration in the two former affections. It is sometimes difficult, however, to distinguish apoplexy from deep intoxication. The habits of the individual, the smell of his breath, and the general relaxation of all the muscles, particularly those of the jaws and the sphincters will generally lead to a correct diagnosis on this point. Dr. Cook observes, that "as the treatment for true apoplexy would not be improper for intoxication, a mistake respecting the cause would not be hurtful to the patient." This is no doubt correct in reference to mistaking intoxication for apoplexy; but if a case of apoplexy were mistaken for intoxication, the consequence might be very injurious to the patient; for under this mistake the case would probably not be subjected to any efficient medical treatment whatever.

Prognosis.—Apoplexy is always to be regarded as a highly dangerous affection. When the sensorial functions are completely abolished, and the respiration is strongly sterterous, intermitting, and attended with a sputtering discharge of saliva from the lips, distortion of the mouth, immobility of the pupils, and an entire loss of the power of swallowing, no reasonable hope can be entertained of a recovery. Nevertheless, patients do sometimes, though indeed extremely seldom, recover from this affection after the most profound coma, sterterous respiration, and foaming of the mouth have supervened.* In general, however, if an appropriate and energetic treatment does not soon make a favourable impression upon the disease in its violent form, the case may be regarded as hopeless.†

The duration of the apoplectic attack varies from a few minutes to two or three days. In some instances, death almost immediately follows the apoplectic seizure. This indeed has been doubted by some. Dr. Cook thinks that the cases of sudden death which have been ascribed to apoplexy depended, probably, on some affection of the heart or large vascular trunks within the chest. There is good reason for believing that this has sometimes been the case; but it is by no means improbable that sudden and extensive extravasations of blood into the substance of the brain, particularly in that part of this organ which gives rise to the respiratory nerves, may suddenly abolish, not only the sensorial powers and voluntary motion, but also the action of respiration, and thus produce speedy death. Death from this affection, however, seldom takes place before the second or third hour from the attack. In most instances, indeed, from twenty to thirty hours, and in some cases five or six days pass before the fatal termination occurs.

Besides the unfavourable symptoms mentioned above, there

* Portal, Observations sur la Nature et le Traitement de l'Apoplexie, p. 404.

† Cook on Nervous Diseases, p. 113. Boston edition.

are various others which are said to indicate especial danger. When the attack commences with sudden severe pain in the head,* or with vomiting,† or a general spasmodic rigidity of the muscles, the utmost degree of danger is to be apprehended. General, clammy, and profuse perspiration, with a small and frequent pulse, is also a peculiarly unfavourable sign. Hippocrates says that the supervention of fever in apoplexy is favourable; but Richter observes that this observation can only be regarded as generally correct when the fever is of the synochal grade and commences early, for when it supervenes at a late period and assumes a typhoid character, it never fails to increase the danger. (Loc. cit. 774.)

The prognosis is also influenced by the character of the exciting cause, and still more by the presence or absence of that corporeal habit, which experience has shown to predispose especially to this affection.

When there are evident manifestations of some degree of sensibility remaining; such as contraction of the pupils from the stimulus of light; some power of swallowing, &c. together with free and regular respiration, without stertor or discharge of saliva from the lips; a warm and general perspiration; the occurrence of sanguineous discharges, particularly from the nose or hæmorrhoidal vessels; diarrhœa, or a copious flow of urine, reasonable hopes may be entertained of a favourable issue of the case.

It was formerly supposed that apoplexy from the rupture of a vessel, and extravasation of blood into the substance of the brain, is always necessarily fatal. This opinion has, however, been satisfactorily controverted by the experience of many of the ablest pathologists of the present day.‡ The observations and dissections of Riobe, Rochoux,§ Cruvelhier, Bricheteau, and Serres;‖ and we may add, of Baillie and Sir Astley Cooper,¶ place the occasional recovery from strong apoplexy beyond all doubt. From the numerous dissections made in the Parisian hospitals by the French pathologists just mentioned, we learn that when sanguineous extravasation into the substance of the brain does not soon terminate in death, a membraneous, vascular structure is formed around the coagulum, and that the coagulum is afterwards absorbed by the vessels of this membrane or cyst. In the progress of time this cyst itself becomes absorbed, and leaves a yellowish cicatrix, or

* Cheyne.
† Richter, Specielle Therapie. Bd. viii. p. 773.
‡ Recherches sur l'Apoplexie.
§ Considerations et Observations sur l'Apoplexie.
‖ Nouvelle Division des Apoplexies, Annuaire Medico Chirurg. vol. i.
¶ Cook, loc. cit. p. 129.

laminated, cellular structure, which in some instances is found to contain a small portion of reddish serum. (Rochoux.)*

Sir Astley Cooper thinks that in apoplexy from sanguineous extravasation "the blood never becomes absorbed, but that the brain gradually acquires the power of bearing its pressure, and that thus the symptoms which are produced at the first moments of general extravasation gradually diminish."† That the brain is capable of accommodating itself in some degree to unnatural pressure from extravasation, or other causes, cannot be doubted. I knew an instance of considerable depression of a small portion of the superior and lateral part of the os frontis from a fall. The child remained in a state of apoplectic insensibility for about twelve hours, and very gradually recovered a state of perfect consciousness in about three days. The depression still continues, and, with the exception of occasional headach, no inconvenience appears to remain from the accident. The numerous and well-attested facts that have been brought to light by the authorities already mentioned, are nevertheless sufficient testimony to establish the truth of the occasional absorption of sanguineous effusions in the brain. Brecheteau and Riobé have reported numerous dissections, "all proving, not only the resorbtion of the effused fluid, but a reunion of the lacerated surfaces afterwards by a kind of cicatrization.‡

Causes.—A variety of circumstances, both in relation to the constitutional habit of individuals, and extraneous influences, appear to predispose to this affection. Of these predisposing causes, the following are the principal:

1. *A peculiar conformation of the body;* consisting in a large head; thick, short neck; broad shoulders; ample chest; florid, and full face; short stature; globular abdomen, with a tendency to plethora and obesity. Such individuals are often subject to hæmorrhage from the nose, as well as to sensations of weight and fulness in the head, particularly on stooping, or making strong corporeal exertions. When they sleep with the head lying low they are restless, disturbed with dreams, and the respiration is heavy and sonorous. Such a corporeal structure constitutes, no doubt, in many instances the hereditary predisposition to this disease, noticed occasion-

* "After the absorption of the extravasated coagulum," says Rochoux, "the sides of the cavities approximate, and unite into a kind of cicatrix by the intervention of a cellular and vascular structure, forming various areolæ, between which a reddish, serous fluid is found. These parietes are much more dense than the rest of the brain, about a line or two in thickness, and of a yellowish brown colour. He asserts that these caverns are invariably found after apoplexy terminating in paralysis, and that their number constantly corresponds with the number of previous attacks."

† Cook on Nervous Diseases, p. 129.

‡ Med. Chir. Rev. June, 1820.

ally in particular families.* It is to be presumed also that a peculiar condition of the intimate organization may, in some cases, establish a constitutional tendency to inordinate determinations to the head, and to the consequent occurrence of apoplexy and other cerebral affections.

2. *Age.* The observations of Hippocrates that apoplexy occurs chiefly between the fortieth and sixtieth years of age, (*Aphor. sect.* vi. *Aphor.* 27.) still holds good at the present day. Instances of apoplexy occur indeed at a much earlier period of life, particularly between the thirtieth and fortieth years; but in a general estimate, it will be found that a very large majority of cases happen after the age of forty. Rochoux states that out of sixty-three cases of this disease, two occurred between the ages of twenty and thirty—eight between thirty and forty—seven between forty and fifty—ten between fifty and sixty—twenty between sixty and seventy—twenty-three between seventy and eighty—and one between eighty and ninety years of age. It would appear from this statement, that apoplexies occur more frequently *after* the age of sixty than at any previous period; and this corresponds with the sentiments of Cullen and Portal. This greater liability to apoplexy at an advanced period of life, cannot be referred to a mere increased tendency to a preternatural determination of blood to the head; for in infancy this tendency is acknowledged to be generally greater than at any subsequent period of life; and yet apoplexy at this early age is an extremely rare occurrence. Some other circumstance, therefore, connected with advanced age, must be the cause of this greater aptitude to the disease. Many pathologists have ascribed this increased tendency to apoplexy in old people to an ossified state of the cerebral vessels; but this opinion is not verified by post-mortem examinations. Others, with more plausibility, have supposed that it may depend on a weakened state of these vessels, similar to that morbid condition of the arterial coats which favours the occurrence of aneurism. It is probable, however, that this predisposition depends on various circumstances of a general character connected with old age, independent of a morbid condition of the cerebral vessels.

3. *Whatever tends to produce general plethora*, or to keep up a preternatural determination of blood to the brain, increases the liability to apoplexy. A full and nourishing diet; the habitual use of stimulating drinks, particularly in connexion with an inactive and sedentary course of life, are especially calculated to increase the predisposition to this disease. Im-

* Dreysig, (Handwoerterbuch der Med. Klinik. B. i. p. 450,) mentions some remarkable cases of this kind. Potal and Van Hoven also state that they have known families in which a hereditary predisposition to this disease was manifested.

moderate venereal indulgences at an advanced age; frequent, and long-continued warm bathing; a sudden change from an active or laborious to a quiet or indolent course of life; intense and protracted study; and the free use of strong coffee, are mentioned among the predisposing causes of this disease.

4. Various organic affections, such as aneurism of the aorta; hypertrophy of the heart; visceral indurations; and stumours about the neck, increase the liability to apoplexy.

The exciting causes of apoplexy are very numerous. In general, whatever produces inordinate determinations of blood to the head, or impedes its free return from the brain to the heart, may give rise to this disease.

Over-distention of the stomach by immoderate eating, more especially if the ingesta are stimulating and of difficult digestion, and the digestive powers weak, is one of the most common and powerful exciting causes of apoplexy. The intemperate use of spirituous liquors, violent exertions in lifting, much straining in evacuating the feces, strong fits of coughing, sneezing, and great exertions in declaiming, playing on wind instruments, singing, laughing, or speaking, by causing sudden and strong determinations of blood to the head, may produce this disease in individuals predisposed to it. Exposure to the direct rays of the sun in warm climates, gives rise to that sudden and fatal affection called *stroke of the sun*, and which is generally regarded as apoplexy. Extreme cold also is capable of producing this affection, by diminishing the circulation in the external vessels, and causing strong internal congestions. Violent and sudden mental excitement, rage, excessive joy, terror, and deep sorrow, have been known to produce this disease. The suppression of habitual discharges, whether sanguineous or serous, may give rise to apoplexy. This is particularly the case with habitual hæmorrhoidal discharge or epistaxis in plethoric subjects. The healing up of old ulcers has a tendency also to produce this disease in persons otherwise predisposed to it, (*Schmucker's Vermisch. Schriften.* B. iii. p. 149;) and the neglect of customary venesection in full habits may tend to the same effect.* Stoll mentions the sudden disappearance of œdema of the feet as an exciting cause of apoplexy, (Ratio. Medend. Pars. iii. p. 305.) Women in the puerperal state, "are in some degree liable to apoplexy." Dr. Davis, of London, states that he has met with four or five apoplectic seizures and consequent hemiplegia in puerperal women. In all these cases, the *habitus apoplecticus* mentioned above, was present.† Tumours or visceral indurations in the abdomen, by pressing on the aorta, may give rise

* Vogel. Prælectiones Academ. § 558.
† Dr. Davis. Medico-Chirurg. Rev. April, 1825.

to this disease. Morgagni related an instance which was produced apparently by an enlarged spleen pressing on the aorta.

Apoplexy may also occur in consequence of the repulsion of chronic cutaneous diseases; and it is frequently the result of metastasis of gout. Authors mention also translations of rheumatism, erysipelas, and of other exanthematous affections among the exciting causes of this disease. I knew an instance in which it appeared to be brought on by a very severe attack of mumps. Violent rigors or chills, particularly the severe and protracted chills of intermittents, sometimes give rise to apoplexy. I have known several fatal instances of this kind. In one case, I stood by the patient when he was seized with the chills; in about ten minutes after they commenced he became insensible; fell into convulsions, and quickly passed into a profound apoplectic stupor, from which he did not recover. The patient was an old, corpulent, and very plethoric man. Intestinal irritation may also cause so strong a determination of blood to the brain as to give rise to this affection.*

Besides the foregoing causes, which operate apparently by causing undue determinations to the vessels of the brain, apoplexy may also be produced by causes that impede the free return of the venous blood from the head to the heart. Stooping, or other situations in which the head remains in a depending position; wearing tight cravats, and turning the head round to look back, by which the jugular veins are in some degree compressed; impeded circulation through the lungs; *organic diseases of the heart*;† tumours on the neck, or in situations where they may press upon the veins which convey the blood from the head, are the principal of these causes.

Authors mention also excessive evacuations among the occasional causes of this disease. Boerhaave states, that he knew an instance of apoplexy apparently produced by an excessive hæmorrhage from the nose. The tendency of excessive sanguineous evacuations to produce soporose or cerebral oppression very similar to apoplexy, has already been adverted to under the general head of hæmorrhages. The work of Marschall Hall, referred to in that place, gives some very interesting observations on this subject. It is certainly a very remarkable circumstance, and not accordant with the presently received pathology of apoplexy, that entire insensibility, with sterterous breathing, sometimes results from profuse hæ-

* There is, indeed, much reason to believe that gastro-intestinal irritation is a very common exciting cause of apoplexy. Thilenius, (*Medicin. Chirurg. Bemerkungen*, p. 66.) Also Schroder, (*De Apoplexiæ ex Præcordior. Vitris Origine Analecta in Opusc.* vol. ii. p. 388.)—as quoted in Jahn's Klinik der Chronischen Krankheiten. Bd. i. p. 340.

† See Medico-Chirurg. Rev. January 1820. pp. 343 and 345.

morrhage.* Diabetes sometimes terminates fatally, under symptoms strongly resembling apoplexy; and the same termination has been noticed in excessive diarrhœa and cholera. (Richter.) Peculiar atmospheric constitutions have also been ranked among the exciting causes of apoplexy; and from causes of this kind, this disease has at times prevailed epidemically.† Besides the authorities referred to below, we have also the more recent testimony of Weikard, (*Vermisch. Schriften*, st. i. p. 292. st. ii. p. 65,) and of Jahn, (*Klinik d. Chronish. Krankheit.* B. i. p. 333,) in confirmation of this fact; and Baglivi mentions the epidemic occurrence of this affection. Richter states, that a humid, cold, and variable state of the atmosphere, appears to be most favourable to the occurrence of apoplexy. It is not improbable, however, that such a condition of the atmosphere depends more upon its electrical and barometrical state, than on its relative degrees of humidity and temperature. This atmospheric tendency to produce or favour the production of apoplexy, is sometimes limited to a few days of continuance. Thus Thilenius states, that in the course of a few days, nine persons were seized with apoplexy in one district. (*Bemerk.* B. i. p. 67—*Richter.*)

Various organic affections of the brain and its meninges, and the narcotic poisons, are also enumerated among the exciting causes of this disease. Gregory doubts whether these latter can, with propriety, be considered as exciting causes of apoplexy. As they tend, however, to cause strong congestion in the vessels of the brain, they may, no doubt, excite this affection in persons otherwise predisposed to it, as other causes do that strongly determine the circulation to the head.

Pathology.—What is the immediate cause of the abilition of sensorial power and voluntary motion in apoplexy? Pathologists are far from being unanimous in their answers to this question. Some maintain, that pressure on the cerebral mass is always the immediate cause of the characteristic phenomena of this disease; others suppose that they depend not on pressure, but simply upon interrupted circulation in the brain;‡ whilst some believe that the encephalic effusions are the consequence of a previous morbid change in the brain, (Rochaux,) upon which the loss of sense and motion depends. Some pa-

* For an interesting example of this kind, see Mr. Brown's case of uterine hæmorrhage, reported in the London Medical and Physical Journal—1827.

† Agathias. De Bello Gothico, in Hugo Grotii. Histor. Gothorum. p. 568. See also, Lepecq. de Clotiere. Anleit. f. Aerzte, Epidem. Krankh. Zubeobacht. p. 412. Fr. Hoffman. Medic. Ration. System. tom. ii. p. 11. s. 11. p. 529—as quoted by Richter, Specielle Therapie, vol. viii. p. 755.

‡ Abercrombie. Researches on the Pathology of the Brain in Apoplexy.

thologists confine the term apoplexy strictly to sanguineous extravasation within the brain; others include *serous* effusions among the immediate causes of the disease; and many believe, and correctly too, that mere vascular turgescence, without effusions of any kind, frequently produces apoplexy.

From a careful examination of much that has been written on this subject, as well as from my own observations, it appears to me clear that the opinion which assigns the characteristic phenomena of apoplexy to *pressure* of the brain, is the correct doctrine on this point.

Post-mortem examination detects in those who die of apoplexy one or more of the following phenomena:—1, vascular turgescence of the brain; 2, sanguineous extravasation into the substance of the brain; 3, serum effused into the ventricles or upon the surface of the brain; and 4, no cognizable cerebral disorder whatever. Of these four conditions, the first only ought, I think, to be considered as primary or essential; the others being consecutive, and not immediately concerned as a cause in the apoplectic seizure.

When the blood flows more rapidly into the arteries of the brain than it can be returned by the veins, preternatural distention of the cerebral vessels must be the consequence; and this general vascular turgescence must exert an unusual degree of *pressure* on the cerebral mass.

That such vascular engorgement and consequent pressure on the brain is capable of producing all the peculiar symptoms of apoplexy admits of no doubt. In some instances of fatal apoplexy, the vessels of the brain are found so much engorged with blood as to render even the smallest branches very conspicuous, and to give a more or less deep red tint to certain portions of the cerebral mass without any sanguineous or serous effusions.* Richter says that an extremely congested state of the cerebral vessels is sometimes the only morbid condition visible within the head.† Bricheteau also observes, "that we often find a general turgescence of the cerebral vessels, which congestion causes a general pressure on the encephalic mass sufficient to extinguish the nervous influence, and destroy life."‡ Morgagni has related a case in which he found on dissection, the whole vascular system of the brain extremely engorged with fluid blood. Dr. James Johnson, in commenting on this case, observes—"that apoplexy is frequently produced by *turgescence* of the vessels alone, was believed in ancient times as well as in modern. It is, indeed, reasonable to suppose, that in the majority of apoplectic recoveries, *con-*

* Portal. Resultats de l'Ouverture des Corps.
† Specielle Therapie. Bd. viii. p. 718.
‡ Journal Complimentaire du Dict. des Scien. Med. p. 296.

gestion only had taken place in the vessels of the brain. But if congestion gives rise to the most favourable cases, it appears capable of producing the most desperate and instantaneously fatal ones also."* Dr. Fouquier, also, has reported a case of fatal apoplexy, which was manifestly the result of mere sanguineous engorgement of the brain. "The exterious vessels of the brain and those of the choroid plexus were much engorged with blood;" and the interior of the cerebral mass when sliced off presented a multitude of red points. Neither serous nor sanguineous effusion was present.†

Strong and sudden sanguineous engorgement of the cerebral vessels is, probably, *always* one of the first morbid conditions in the occurrence of apoplexy, or the immediate and primary result of the combined agency of diminished vital resistance in the vessels of the brain, and a preternatural afflux of blood to the head. (Johnson.) This vascular turgescence may either pass off again under proper remediate measures, or it may terminate speedily in sanguineous extravasation into the brain, or continue finally without any effusions until it terminates the patient's life. What is usually termed *serous apoplexy* is perhaps only one of the terminations of apoplexy from vascular turgescence. A sudden violent determination of blood to the brain, and consequent cerebral compression, may immediately destroy all sense and voluntary motion. If the vessels are not relieved by extravasation or by remediate applications, they may, in the course of some hours, relieve themselves by *serous effusion*, as they do in *hydrocephalus acutus*; and this effusion must then become a secondary but permanent cause of cerebral compression. It is unnecessary here to adduce any arguments in support of this pathology of serous apoplexy. We often meet with striking examples of sudden serous or lymphatic effusions from vascular engorgement. Every one has heard of the affection usually called apoplexy of the lungs. Sudden and often fatal effusions of this kind occur into the substance of the lungs from violent engorgement of its blood-vessels.

It appears highly probable, therefore, that strong *vascular turgescence* of the encephalic mass constitutes the primary pathological condition of apoplexy. This state often terminates almost immediately in sanguineous extravasation, or at a later period in serous effusion; and both these consequences constitute, of course, additional causes of cerebral compression.‡

* Medico-Chir. Rev. June, 1820, p. 9.

† Annuaire Medico-Chirurgicale, vol. i. p. 376.

‡ M. Serres contends that both sanguineous and serous effusions are always the effect, and not the cause of apoplexy. He denies that pressure, in any case, is capable of producing either this disease or hemi-

To this view of the pathology of apoplexy, it has been objected, that cases sometimes occur in which the brain on dissection exhibits no traces whatever of vascular congestion, nor any other obvious lesions. Petzold has related instances of this kind, which he ascribes to *inanition of the cerebral vessels*, and in which not the slightest unnatural appearances were discovered on dissection, except an empty and collapsed state of the vessels of the brain.* Such cases are, however, extremely uncommon; and do not, upon proper inquiry, militate against the doctrine advocated above. Upon this point Dr. Johnson observes, "that there is nothing more certain than that the vascular turgescence in the brain may so far subside, in the interval between death and dissection, as to leave no trace of its previous existence. This in fact," he continues, "we consider to be the natural and true solution of the difficulty respecting the cause of apoplexy in those cases where the scalpel cannot detect deviations from the healthy structure."† There is, however, another objection that has been urged against the doctrine of cerebral compression as the exclusive cause of apoplexy, which, though plausible, possesses no real weight. It is stated, and correctly, that all the external manifestations of strong apoplexy are sometimes the immediate result of excessive hæmorrhage. I have already referred to the case reported by Mr. Brown, in which entire insensibility and sterterous breathing were the immediate consequences of excessive uterine hæmorrhage, and which were removed by transfusing blood

plegia. He thinks that what is usually termed serous apoplexy depends on disease of the meninges; apoplexy with paralysis, he says, is the immediate consequence of an altered state of the cerebral structure, attended generally with sanguineous extravasation as a secondary result. His reasons for denying the agency of pressure in the causation of this affection, are derived from the fact, that fatal apoplexy sometimes occurs without any effusion or extravasation, or even vascular turgescence appearing on dissection; and from some experiments which he made on animals, in which the cranium was opened, and a vessel wounded, and the blood carefully confined within the head by closing up the external opening. Although much blood was thus extravasated and lodged into the great interlobular scissure and upon the surface of the brain, no comatose or paralytic affections ensued. These views, so far as cerebral pressure is concerned in the production of the disease, are, however, directly contradicted by the results of some experiments made in relation to this subject by Portal. This pathologist trepanned the cranium of a dog. By different degrees of pressure made on the brain through the opening with the finger or a piece of wood he could at pleasure produce convulsions, or coma, and apoplectic stertor; and Sir Astley Cooper obtained the same results from similar experiments made on a dog. (*a*)

* Dissert. de apoplexia ex inanitione vasorum cerebri, Goett. 1785.

† Med. Chir. Rev. June, 1820, p. 8.

(*a*) *Cook on Nervous Diseases.*

from another person into the patient's veins.* Dr. Denman has also related an instance of apoplectic symptoms supervening on very profuse hæmorrhage,† and indeed many more cases of this kind might be collected. In relation to such cases it is to be observed, that great losses of blood appear to be peculiarly favourable to extraordinary determinations to the brain, or as Marshall Hall expresses it, "to increased action and fulness of the cerebral vessels."‡ The experiments of Kellie on animals show that serous effusion within the head is a pretty constant concomitant or consequence of excessive sanguineous depletion; and the experiments of Dr. Seeds go to establish the same fact.§

The sanguineous extravasations are usually found in the corpus striatum, or in the thalami nervorum opticorum. Out of forty-one dissections, Rochoux met with but five or six instances of extravasation in other parts of the brain; and observations of Morgagni give nearly the same result.‖ Extravasation of blood into the cerebellum is an extremely rare occurrence. According to Rochoux it hardly happens once in fifty cases; and Morgagni reports only one instance of this kind. "Blood is rarely effused, *in the first instance*, into the ventricles. During ten years' observation in the different hospitals, M. Bricheteau saw only two cases of this kind. The fluid is generally extravasated in the neighbourhood of the ventricles, and bursts into them by a ragged opening." (*Med. Chir. Rev. loc. cit.*) Occasionally blood has been found effused on the surface of the brain. Rochoux relates a case of this kind; and Richter states that sometimes the brain, on removing the cranium, appears dark, brown, or blackish, through the membranes from extravasated blood underneath. (*loc. cit.* B. viii. p. 719. The old division of apoplexy into *sanguineous* and *serous*, possesses no importance in a practical point of view. I have already stated that the effused serum sometimes

* Lond. Med. and Physical Journal, 1827.

† Trans. of a Soc. for the Improv. of Med. and Surg. Knowledge, vol. iii. p. 315.

‡ Medical Essays, p. 68.

§ M. Seeds, in six experiments performed on animals which he bled to death, he found the contents of the cranium and spinal canal so engorged with blood, that it might at first sight have been thought that blood-letting would have saved the animals."—*Medico-Chirurg. Jour. and Review*, vol. i.

‖ In explanation of this fact, M .Bricheteau observes, "an attentive study of the vascular system of the brain shows us that a number of arteries penetrate directly into these parts—the corpus striatum, &c. without dividing themselves in the pia mater, as the other vessels do which serve to nourish the brain. In consequence of this they are without an additional membraneous support in the middle of the cerebral mass, the consistence of which is but illy calculated to support them against the impulse of the blood.—Loc. cit.

found within the head on dissection, is very probably not the immediate cause of the apoplectic seizure, but one of the results of the vascular engorgement, upon which the apoplexy depends. There are, never theless, some circumstances connected with this distinction which it may be proper to notice. Thus, it appears, from the observations of M. Serres, that when the apoplectic attack is complicated with hemiplegia we may infer that there is extravasation into the cerebral substance. When, on the other hand, the disease is unaccompanied with paralysis, we may presume that the substance of the brain remains uninjured, and that more or less serum, or sero-sanguineous fluid is effused by the congested and irritated meninges upon the surface, or into the natural cavities of the brain. The former variety—that is, the complicated or paralytic form of the disease, M. Serres calls *cerebral apoplexy*, from the cerebral mass itself being the principal seat of the morbid changes. The latter, or uncomplicated variety, he denominates *meningeal apoplexy*, on account of the manifest traces of vascular irritation and congestion, discovered by dissection in the meninges. It appears from the observations made in the Parisian hospitals that meningeal or serous apoplexy occurs chiefly before the fifteenth and after the sixtieth years of age; and that females are more liable to this variety of the disease than males.

When blood is extravasated into one hemisphere of the brain, the consequent paralysis occurs almost universally on the opposite side of the body. The paralysis is occasionally general—both sides of the body being equally affected. In such cases the mouth is not drawn to either side, and the patient dies as from asphyxia; or as animals do who have the pneumo-gastric nerves of both sides divided. The extravasation, in cases of this violent character, takes place into the substance of the tuber annulare, or bursts from thence and spreads along the basis of the skull. (*Serres.*) The existence of hemiplegia may, in general, be readily detected by the distortion of the mouth; for however profound the apoplectic stupor may be, more or less deviation from the natural position of the mouth is almost universally present.

Treatment.—The main object to be kept in view in the treatment of apoplexy, is the removal of the vascular turgescence within the head. This fundamental indication is to be answered by a prompt reduction of the general mass and momentum of the blood; and by the employment of means calculated to lessen the determination of the blood to the brain, and to derive it from the cerebral vessels.

In the actual paroxysm of apoplexy, the patient should be immediately removed to an airy and cool situation, and placed in a position which least favours the flow of blood to the head. All ligatures, particularly those about the neck, should be

speedily removed, and his head and shoulders supported in an elevated position. In this posture a large orifice should be made into a vein, and the blood suffered to flow until a very decided impression is made on the pulse, at the same time that cloths, wet with *cold water*, are applied to the shaven scalp, and warm or stimulating applications—such as fomentations, sinapisms, or frictions with tincture of capsicum, made to the legs and feet. Cups may also be very beneficially applied to the temples and back of the neck, conjointly with the means just mentioned. Some advise bleeding from the temporal artery or the jugular vein in preference to brachial venesection; but others do not regard this preference as founded on good grounds. It is nevertheless very probable that blood promptly drawn from the jugular veins or temporal arteries, will have a more direct and speedy effect in diminishing the sanguineous congestion in the brain than if it be taken from the arm; and as the accomplishment of this effect constitutes our chief purpose in the employment of blood-letting, we may with propriety adopt this mode of depletion. In whatever way the blood is drawn, little or no advantage will be obtained, unless a sufficient quantity is abstracted to produce a very obvious impression on the action of the pulse; and this effect can seldom be produced without the loss of from thirty to forty ounces of blood at once. If in the course of an hour the pulse resumes its activity, a second venesection should be practised, and repeated afterwards at longer or shorter intervals, as long as the pulse indicates the propriety of further depletion. It is sometimes necessary to abstract a vast quantity of blood before the disease begins to subside. "From six to eight pounds of blood have been taken from a person by no means robust, before the disease began to yield."* I have myself drawn five pounds of blood from an apoplectic patient in the course of six hours after the seizure, with entire success. In the employment of blood-letting we may suffer ourselves to be guided by the pulse, as has just been stated. Nevertheless, the judicious practitioner will regulate the extent to which this evacuation is carried, not only by its effects on the pulse, but by an attention also to the age and constitutional habit of the patient. I have met with a case of apoplexy which ultimately proved fatal, in which the loss of thirty ounces of blood produced, almost immediately, much feebleness of the pulse. The patient was a female, beyond the seventieth year of age.

Leeching is of no service beyond what may result from the general diminution of the circulation. Cupping, however, is a most important auxiliary. After an efficient venesection, the application of cups along the temples and back of the neck, or to

* Cheyne.

the shaven scalp, will sometimes speedily rouse the patient from his stupor.*

The application of ice, or very cold water to the scalp, is one of the most useful remedies in this disease. This was a favourite measure with Thilenius,† and his praise of its powers, though great, can scarcely be deemed extravagant. Its efficacy will be much enhanced by the simultaneous application of warmth, or stimulating frictions to the legs and feet. Of course, where the pulse is feeble, and the countenance pale, cold must be cautiously applied, but stimulating and warming applications to the lower extremities are always proper. Formerly blood-letting was regarded as of very doubtful propriety in this affection; but at the present day its usefulness, or rather its indispensableness, in every case of genuine apoplexy, is universally acknowledged.

Active purgatives also are among our most efficient remedies in this affection. As the advantages derived from them depend, no doubt, in most instances, chiefly on the tendency they have to direct the circulation more particularly to the intestines, and to excite a free secretion from their internal surface, and consequently to diminish the afflux of blood to the head, it is evident that the more rapidly they operate, the more beneficial will be their influence. On this account, as well as from the great intestinal torpor which prevails in this affection, it is necessary to employ the most active articles of this class of medicines. It is, however, often extremely difficult, and in violent instances, sometimes impossible to administer cathartics by the mouth, from the paralyzed state of the organs of deglutition. Where the power of swallowing is wholly destroyed, we may introduce a purgative fluid into the stomach through an elastic stomach tube. Calomel and extract of jalap are recommended by Sir Gilbert Blane as the best purgative in this affection. Calomel and colocynth form also a suitable purgative. I have used the oil of croton, rubbed up with a little gum arabic and water, with excellent effect in two instances of apoplexy. This article generally acts with much energy, and from its small bulk and fluidity, is more easily introduced into the stomach than other remedies of this kind. Castor oil with turpentine, also forms an excellent purgative in this disease. At the same time that cathartics are given by the mouth, active purgative enemata should be repeatedly administered. For this purpose we may use a solution of aloes in warm water, in the proportion of from thirty to forty grains to the pint of water; or a strong infusion of senna. Richter advises a solution of tartar emetic for

* Dreysig, loc. cit. p. 481.

† Medicinische und Chirurgische Bemerkungen, p. 62. et seq.

this purpose. Where the vascular reaction is vigorous, this solution may be peculiarly serviceable, by the nausea and consequent reduction of arterial excitement which it is apt to produce, as well as by its evacuant effects on the bowels.

Purgatives are particularly useful where the bowels are in a loaded condition. Dr. Abercrombie relates some instances of this disease, in which blood-letting afforded but very little advantage. As soon, however, as the bowels were freely evacuated, a very obvious improvement took place. Where the inordinate flow of blood to the brain is caused or supported by intestinal irritation from accumulation of feculent matter, or the presence of vitiated secretions, it would seem in vain to expect decided benefit from bleeding or any other remedy, unless the bowels are freely moved; and it is in such cases especially, that cathartics are of primary importance.

Formerly *emetics* were much extolled for their remediate powers in apoplexy. Van Helmont, Riverius, Stoll, and Burserius, placed much dependence on them in the treatment of this disease.* Since the time of Cullen, however, they have been generally abandoned, as much more calculated to do mischief than good.† Unquestionably, as a general rule, emetics must be regarded as hazardous remedies in apoplexy; for the tendency of vomiting to propel the blood to the head is always very considerable. Nevertheless, this disease may occur under circumstances of gastric irritation, which may not only render emesis useful, but absolutely indispensable to success. When the apoplectic seizure occurs soon after taking a very full meal of stimulating food, an emetic ought undoubtedly to be given. But even under the most urgent indications for the exhibition of an emetic, a copious and efficient abstraction of blood should always be premised. A few years ago, I met with a striking instance of the usefulness of emetics in apoplexy, under the circumstances just mentioned. A robust man, about fifty years of age, fell down in a fit of apoplexy about an hour after he had taken a very full meal of animal food with several glasses of brandy and water. The coma was profound, and the respiration steterous and sputtering. He was immediately bled to the extent of about forty-eight ounces, but although the pulse was considerably reduced no perceptible improvement ensued. Twenty grains of sulphate of zinc were with difficulty introduced into his stomach, and free vomiting ensued in about ten minutes after. Almost immediately after the contents of the stomach were thrown off he became better; and by the use of purgatives, enemata, and cups

* Burserius. Inst. Med. Pract. vol. iii. § 131, p. 106.

† See Lond. Med. and Phys. Jour. vol. v. and vi. for an ample discussion on this subject.

to the head, he recovered without any further difficulty. Dr. Gregory says, "in certain cases vomits are proper; but they should never be given till after large evacuations by blood-letting. They are most proper where the disease proceeds from a surfeit; and in *serous* habits vomits are very efficacious."* Authors generally advise the mildest emetics in cases where they are indicated. Heberden gave a weak infusion of chamomile; Cheyne used lukewarm water with hartshorn; and others recommend warm water with mustard. It is very questionable, however, whether any peculiar advantages attend the use of these milder emetics. Indeed, the system is almost always so insensible to the impressions of medicines, that nothing but the most active articles in large doses, will procure emesis. Where there are indications present to justify the exhibition of an emetic, the more promptly the stomach is evacuated the better. Richter, who speaks very favourably of the employment of emetics in cases of this kind, advises the most active articles of this class.†

Blisters do not appear to afford any advantage in apoplexy, unless the pulse is weak, small, and quick, which, though rarely, is sometimes the case, in old and enfeebled persons of leucophlegmatic habits. At all times, however, it is better to apply them to the ankles and wrists than to the head or back of the neck.

It is scarcely necessary to say, that stimulants are decidedly improper in the early period of apoplexy. Where, after copious evacuations, some degree of consciousness and a power of voluntary motion returns, with much prostration and a feeble pulse, some benefit may perhaps be obtained from the cautious exhibition of the carbonate of ammonia or camphor, (Richter,) in the form of a mucilaginous mixture.

The prompt and judicious employment of the foregoing means, embraces every thing that may be deemed efficient in the remediate management of apoplexy. From whatever cause the disease may arise, our whole efforts should be directed to the removal of the inordinate vascular action or turgescence within the head. Some modifications in the mode of employing the measures mentioned, according to the general constitutional habit, the age, and the character of the exciting causes, will of course be necessary. Thus, in cases which succeed the sudden suppression of habitual hæmorrhoidal discharge, some peculiar advantage may perhaps be gained from the application of leeches to the anus; if the healing up of old ulcers on the lower extremities appears to have given occasion to the apoplectic seizure, blisters, issues, or sinapisms to these parts will

* MS. Lecture as quoted in the Med. Chirurg. Rev. June, 1820. p. 26.
† Med. Chir. Bemerkungen. B. ii. p. 109.

be proper; and I have already adverted to the usefulness of emetics when the attack takes place soon after a surfeit, and the indispensableness of cathartics when the bowels are loaded with feculent and other irritating matters.

During convalescence from apoplexy, nothing but the lightest unirritating diet should be allowed; and unless great prostration exists, all kinds of vinous liquors should be interdicted.

The prophylactic management, in persons labouring under the usual premonitory symptoms of apoplexy, or constitutionally predisposed to this affection, constitutes a very important point of medical attention. A simple, abstemious diet, exercise in the open air, and the avoidance of all kinds of stimulating drinks, as well as of sudden and violent mental excitement, are among the most important precautionary measures in cases of impending apoplexy. If the bowels are torpid, and cannot be brought to a regular state by vegetable diet, it will be necessary to use an occasional dose of some mild laxative, as castor oil, or small portions of rhubarb; and where there is reason to suspect hepatic torpor or derangement, three or four grains of blue pill with a few grains of pulvis antimonialis, taken occasionally at night on going to bed, will be useful. When alarming premonitory symptoms come on, with an active, full, and hard pulse, blood should be immediately drawn to an extent sufficient to reduce considerably the momentum of the circulation, and a brisk cathartic administered. It should be recollected, however, that bloodletting affords only temporary benefit. A copious abstraction of blood may obviate an approaching attack of this disease, but frequent venesection will do little or no good in preventing that general plethoric habit which is so favourable to the occurrence of this affection. This must be done by abstemious living; and above all, by an active course of life.

Persons predisposed to apoplexy from corporeal conformation, should be particularly careful not to interfere with, or check hæmorrhoidal discharges, unless they become excessive. The same precaution is necessary with regard to epistaxis in individuals of the apoplectic habit, as well as with other habitual evacuations.

Drs. Cheyne* and Stoker† recommend the internal use of small doses of James's powders, or pulvis antimonialis, where there is an habitual tendency to inordinate sanguineous determinations to the head. In one instance of this kind, I have known the daily use of two grains of James's powder, mornings

* Dublin Hospital Reports, vol. i. p. 315.

† Dublin Medical Essays, anno. 1806. Transactions of the Association of Fellows and Licentiates of the Queen's College of Physic. Dublin, vol. ii.

and evenings, of unequivocal benefit. Green tea also is said to possess the power of diminishing or obviating cephalic congestions. Drs. E. Percival* and Stoker strongly recommend it for this purpose in comatose affections; and my own experience leads me to think that it possesses considerable powers in this way. Coffee, however, is decidedly injurious where there is an apoplectic tendency. Some eight years ago, a gentleman in this city, of a strongly developed apoplectic habit, was seized with an attack of this affection. He was in the habit of taking large quantities of very strong coffee twice daily. I advised him to leave off taking this beverage entirely. He did so; and has not since experienced even the ordinary premonitory symptoms of the complaint. Apoplectic subjects should be very careful not to bath their feet in very *cold* water—more especially when they are subject to habitual perspiration from these parts. The frequent use of the warm bath also is hazardous in persons of this habit; and excessive venereal indulgence is equally apt to do injury.

CHAPTER III.

PALSY.

Palsy consists in impaired or abolished power of voluntary motion, or of sensation, or of both, in certain parts of the body, without coma, or a loss of consciousness. Cases in which both sensibility and the power of motion are at once destroyed, are however extremely rare. Instances even occur in which the sensibility of the palsied part is morbidly increased. I have met with a case of this kind. The patient had lost all command over the muscles of the lower extremities; but the sensibility of the skin from the knees downwards was so great that even moderate pressure with the fingers gave rise to considerable pain. An instance is related in a recent French journal, in which the surface of the paralyzed limb was entirely insensible, but the muscles beneath were the seat of acute pain, which was always much increased by pressure.† In general the paralyzed parts become soft and flaccid, and at last usually

* Dublin Medical Essays, vol. ii. p. 44.
† Med. Chir. Rev. Oct. 1829, p. 168.

emaciated, or occasionally œdematous. Sometimes a peculiar tingling, or creeping sensation (*formicatio*) is felt in the affected parts, "as if small insects were creeping over them." The opinion generally entertained, that the temperature of parts affected with palsy is lower than natural, does not appear to be founded on correct observation. It is indeed true, that we very frequently find such parts cooler than the rest of the body; but this circumstance would seem to depend on the diminished power of the paralytic part to maintain its specific temperature: or in other words, to resist the physical laws of the distribution of heat, in consequence of which, such part becomes cooler when exposed to a temperature below that of the human body, and warmer than natural when exposed to a temperature above this point.* Patients sometimes complain of a severe sense of cold in the affected parts, although to the touch the temperature does not appear to be materially diminished. The pulse is often considerably smaller and weaker in the paralyzed limb than in the healthy ones; in some cases, however, it is fuller and stronger in the affected than in the sound side; and occasionally no difference whatever can be perceived in this respect.

When palsy arises from disease of the encephalon, it is generally attended with an evident impairment of the mental powers—amounting, in some instances, to complete imbecility. The memory, especially, is apt to suffer in this affection; and in some cases in a very singular manner. Individuals affected with cerebral palsy have lost the power of recollecting particular words, numbers, letters, localities, or even their own names; whilst in other respects no material defect was manifested in this faculty. The natural temperament and disposition also sometimes suffer a total change from a stroke of palsy. Individuals of amiable and placid dispositions have become sullen, peevish, irascible; and persons of an irritable and passionate temperament have been rendered mild and simpering by a paralytic seizure. (Cook.)

Paralysis has been known to occur periodically. A case of palsy is related by Musgrave, (*Philosoph. Transact.*) which regularly returned every eight days, and continued each time to the fourth day. The duration of palsy is very various. Occasionally the affected muscles recover almost entirely their healthy powers in a few days; but the progress of amendment is much more commonly very gradual and slow. It is a singular fact that the extreme parts of a paralyzed limb are often the first that manifest any degree of returning muscular power. I attended a hemiplegiac patient about two years ago, for

* Dr. Abercrombie.—See Cook on Nervous Diseases, p. 227. Boston, 1824.

three weeks without any apparent amendment; at last, however, he found that he could move his toes; by degrees he regained the power of moving the foot, then the leg, and finally the thigh. The same progress of amendment occurred in the paralyzed arm. The power of motion began in the fingers, and gradually extended upwards.

When palsy occurs in the whole of one side of the body it is termed hemiplegia; if both the inferior extremities, from the hips downwards, are paralyzed, it is called paraplegia; and when only some one particular part is affected with palsy it constitutes the *paralysis partialis* of authors. Paralysis, without coma, affecting the whole body, is an extremely rare occurrence. Cases of this kind, however, have been recorded. A very curious instance of general palsy occurred lately in one of the Parisian hospitals. The paralysis in this case commenced in the feet, and gradually ascended towards the body; when it had arrived at the knees the palsy seized also upon the hands, and slowly passed upwards to the trunk; finally every voluntary muscle, excepting those of the face, neck, and tongue became paralyzed. The patient's general health was good, and his intellect perfect.* Tissot relates an instance of a boy who, apparently in consequence of a repelled scabby affection of the head, became paralytic throughout nearly the whole of the muscular system, attended with much torpor of the sensorial functions, and mental weakness, though wholly free from coma or somnolency.† M. Bretonneau has related a somewhat similar case. "A lady was seized with paralysis of the little finger of the left hand, which gradually extended to the whole of that side; the right became similarly affected, with the exception of the thumb and two fingers. The whole body was thus palsied—the tongue was motionless, and deglutition extremely difficult; but her intellectual faculties remained unimpaired."‡ Cook mentions a case, from a publication of M. Keratry, in which there was paralysis of the "arms, thighs, and of the whole exterior surface of the body, with the exception of the face."

HEMIPLEGIA.

This is by far the most common of those forms of palsy which depend on oppressed function of the sensorium commune. In its essential pathological character it does not appear to

* Medico Chirurg. Rev. Oct. 1829, p. 168.

† Medical Works, vol. iv. p. 552.

‡ Med. Chir. Rev. Oct. 1826, p. 604. Clinical Report of the Hospice de Perfectionnement. Rev. Medicale, 1826.

differ materially from apoplexy; and it occurs frequently as an immediate concomitant affection of this disease. Hemiplegia is indeed almost always ushered in with more or less distinctly marked apoplectic symptoms.

Occasionally the hemiplegiac attack occurs suddenly, without any distinct manifestations of its approach. Much more frequently, however, some of the ordinary premonitory symptoms of apoplexy precede the attack for several days; and just before the seizure, strong symptoms of sanguineous determination to the head, and cerebral disturbance, are particularly apt to occur—such as flushed face; distention of the veins about the head and neck; vertigo; a sense of fulness, weight, and sometimes pain in the head; ringing in the ears; drowsiness; impeded articulation of words, or loss of speech; slight delirium, or confusion of the mind; loss of memory, and a change of habitual disposition. M. Serres states that he has noticed in cases that came on gradually, distortion of the mouth for several hours before the hemiplegia supervened; and immediately before the seizure he has sometimes remarked that in the act of respiration one side of the chest was quiescent, whilst the other was very conspicuously dilated and contracted.

The reproductive or vital functions are seldom much disturbed in the ordinary cases of hemiplegia. In some instances, however, the whole tract of the alimentary canal is extremely torpid, and it would appear that the liver is sometimes affected.* The countenance generally acquires a vague or fatuous expression; the mouth is drawn to one side; the lower lip on the palsied side hangs down and suffers the saliva to dribble away. Articulation is always more or less difficult and indistinct, and deglutition is generally somewhat impeded and difficult—more especially on attempting to swallow liquids. It is in this form of paralysis, particularly, that the mind is apt to suffer from the long continuance of the disease. General impairment of the intellectual powers usually occurs; but the memory, especially, is most apt to become conspicuously enfeebled, and even wholly effaced.

Very remarkable anomalous circumstances are sometimes connected with hemiplegiac affections. Cook has collected a great variety of curious cases of this kind. Thus, an instance is related in which the arm of one side and the leg of the opposite one were palsied, (*Fabricius;*) another, where the sensibility, but not the power of voluntary motion, was destroyed in one leg, whilst in the other the power of motion was lost, with the sensibility unimpaired. (Ramazzini.) Cases are reported in the Memoirs of the Royal Academy of Sciences, in which there was an entire loss of sensibility, without any im-

* Morgagni. Epist. xi. art. xiv.

pairment of voluntary motion. In some instances the sensibility is morbidly increased. Falconer mentions a case in which cold bodies communicated the sensation of heat to the palsied parts; and in the case Dr. Vieusseux, (Med. Chir. Trans. vol. ii. p. 216, 217,) the right side was at first so insensible that it could be pinched or pricked without giving him pain; afterwards this insensibility seized on the left side. In the right side cold bodies excited the sensation of heat, and hot bodies that of cold, or only coolness. Dr. Cook has seen a case of hemiplegia in which the muscles of the left arm, from the shoulder to the elbow, were much emaciated, and greatly impaired in activity; whilst those of the forearm were in a perfectly natural state, both as to fulness and power. The condition of the right arm was directly the reverse, the muscles of the part above the elbow were natural in size and energy, but those of the forearm were wasted and powerless.

In some instances little or no improvement takes place, and the patient remains helpless often for a long time, and at last dies either from gradual exhaustation, or suddenly from apoplexy. More commonly, however, more or less amendment slowly occurs, until the patient is perhaps able to support himself with but little aid in a sitting posture, or even to walk about, with some assistance, without any further improvement. Occasionally the paralysis passes off almost entirely in a few days; but the progress of improvement is usually very slow and gradual, and rarely goes on at once equally throughout the whole of the paralyzed part.

PARAPLEGIA.

The palsy, in this form of the disease, is confined to the lower half of the body—that is, to the pelvis and the inferior extremities. When the immediate cause of abolished nervous function is seated in the upper parts of the spine, the paralysis will affect the superior parts of the body; but the term *paraplegia* is generally restricted to palsy of the inferior extremities and parts about the pelvis.

Paraplegia generally comes on gradually, and when it arises from an affection of the brain is often preceded and accompanied in its course by pain in the head, giddiness, drowsiness, dimness of sight, and impaired memory. Sometimes a feeling of heaviness and numbness is felt in the upper extremities as a precursory symptom of this form of palsy. At first the patient usually experiences a slight stiffness and awkwardness in the motions of the lower extremities, which gradually increase

until the patient finds himself unable to maintain the due balance of the body without the aid of a cane. As the disease advances, "the stream of urine becomes more and more feeble, and at length dribbles off involuntarily." The bowels are generally constipated; but when the sphincter muscles of the anus become paralyzed, the feces are evacuated without the consent of the will. I have met with an instance of paraplegia in which a retention of the urine, requiring the use of the catheter for five or six days before any paralytic affection was experienced in the lower extremities. Sometimes the palsy is complete, the patient being unable to maintain even a sitting posture; in other cases the power of motion does not become wholly destroyed, so that with a little assistance the patient may be supported in a sitting position. (Baillie.)* When paraplegia depends on an affection of the spinal marrow, which is indeed most commonly the case, it usually approaches very gradually, unless it occurs as the immediate consequence of some mechanical injury of the spine. The patient at first feels a languor and weakness in the knees; after some time a difficulty in directing the feet occurs, and the legs in walking are involuntarily thrown across each other, causing frequent tripping or stumbling. By degrees the insensibility and loss of muscular power in the legs and thighs become more and more conspicuous, until, at length, a total paralysis of these parts occurs. The loss of vitality is sometimes so great that gangrene and sloughing of the legs ensue from the mere pressure of the parts against the bed. About six years ago, I met with a case of paraplegia in an adult, which, from the attending symptoms of cerebral disturbance, depended, I presume, on some affection of the brain. In the course of about ten days after the accession of the paralysis the heal first, and then rapidly all the soft parts of the right leg, from the ankle to near the knee, became gangrenous, and sloughed off, in a few days, to the bones.

Paraplegia from cerebral affections occurs most commonly after the forty-fifth year of age, and, according to the observations of some, more frequently in males than in females. That variety of paraplegia which depends on disease or injury of the spine, is most common in childhood, and seldom occurs spontaneously after the age of puberty. Contrary to cerebral paraplegia, it is more frequently met with in females than in males.

* Observations upon Paraplegia in Adults. By Mathew Baillie, M. D., in the sixth volume of the Medical Transactions of the London College of Physicians.

PARALYSIS PARTIALIS.

Every sensitive and motive part of the animal system may lose either its power of feeling, or of motion, or of both. In some instances the palsy is confined to a particular organ, but when the muscles are the seat of the affection it generally embraces either all the flexors or extensors, or both, of a part or the whole of a limb. Some cases of partial paralysis are attended with loss only of sensorial power. Of this kind are the paralytic affections of the olfactory nerves; of the retina; of the gustatory nerves; of the auditory nerves; and of the nerves of general feeling or touch. In other cases the palsy is confined to a deprivation of the power of motion, with or without the loss of sensibility, in a particular part. In some instances a single muscle alone is paralyzed. Abercrombie mentions a case of this kind which continued for a long time without either extending to other muscles or becoming better. Paralysis of the muscles of one side of the face is by no means uncommon, and in some cases the under lip only becomes thus affected. The eyelids also sometimes become palsied; and a loss of the power of voluntary motion in the muscles of the hands, feet, fingers, wrists, legs, and thighs is of frequent occurrence. The bowels, the œsophagus, the pharynx, the bladder, the different sphincters, and the erector muscles of the penis, are occasionally affected with palsy; and it is not improbable that some of the secretory organs—particularly the kidneys and liver, may sometimes be thus affected.

Of the Causes of Paralysis.

The *predisposing* and *exciting* causes of those forms of palsy which arise from an affection of the common nervous centre, so far as they can be ascertained, do not differ from those which have already been mentioned under the head of apoplexy. In relation to the immediate or proximate cause of palsy, whether of a general or local character, it would seem that so far as it is dependent on the state of the brain, it may be the consequence of a great variety of morbid conditions of this organ.

It has been generally supposed that *pressure* on the brain is the chief immediate cause of hemiplegia. That sanguineous or serous effusions, and other causes producing pressure on the brain, often give rise to paralysis, appears to be well established. "When the causes which produce cerebral pressure act generally and powerfully," says Dr. Cook, "they seem to produce apoplexy, and to give occasion to palsy when they act

partially or with less violence; so that by an increase of power of the cause, palsy may terminate in apoplexy; and by a diminution of it, apoplexy may terminate in palsy." Hemiplegia is, indeed, a very frequent consequence of apoplexy; and, on the contrary, paralysis very often terminates at last in an apoplectic attack. It is, nevertheless, equally evident from the many pathological investigations which have been made on this subject within the last ten or twelve years, that both general and partial palsy depends sometimes on affections of the brain or its spinal prolongation, wholly unconnected with any circumstances that might be supposed capable of exerting any pressure on the encephalon. Reasoning, indeed, upon the general nature of palsy, we would be led, *à priori*, to suppose that every thing which is capable of greatly disordering the source of nervous power, might give rise to this affection. Dr. Powel, in an interesting paper on the subject of paralysis from sudden exposure to cold, has adduced some cases which would seem to show that both general and local palsy sometimes depends on a morbid condition of the *nerves alone*, wholly independent of any diseased state of the encephalic mass. So far, however, as post-mortem examinations can throw any light upon the nature of the proximate cause of general paralysis, we have direct evidence that almost every variety of cerebral lesion and disorder may produce hemiplegia and other forms of palsy. We not only find this affection connected with sanguineous extravasation into the brain, but also sometimes with serous effusion; or with traces of recent inflammation and vascular turgescence; with encysted suppuration; with induration of some portions of the cerebral mass; with softening of the brain, or with destruction and entire loss of a portion of it; and with other morbid conditions of this organ. (Abercrombie.) Willis states, that in cases of protracted palsy, he has found the corpora striata in a diseased condition; and Peyrouse, in one instance, found a firm tubercle about the size of a bean in the middle of the corpus striatum. (Cook.) The most frequent morbid appearances, however, discovered on dissection, is organic lesion or injury of the cerebral substance, particularly about the corpora striata, thalami nervorum opticorum, and in the medulla oblongata or its immediate vicinity. M. Serres mentions a case of apoplexy attended with palsy, in which every part of the brain was perfectly sound, except the tubar annulare, which was completely destroyed by a central cavity containing a clot of blood. Although some of these phenomena usually present themselves on the dissection of paralytic subjects, yet each of these morbid conditions of the brain not unfrequently exists without any, or with but very slight manifestations of palsy. There exists also much diversity in the extent and particular form of the paralytic affec-

tions connected with apparently similar morbid states within the brain. In one patient, a particular lesion or diseased condition of the brain will be attended with almost universal palsy; in another, a similar state of cerebral affection, with regard to its location and general character, will be accompanied with hemiplegia; in a third patient, perhaps with paraplegia; and in a fourth one, only with partial paralysis. It would appear also that in hemiplegia the immediate cause may be in the spine. Dr. Prichard has published some observations which render this opinion at last highly probable.* Notwithstanding, therefore, the light which dissection has thrown on the etiology of palsy, we are yet far from possessing any very satisfactory or precise information on this interesting subject. The general fact that pressure or organic lesion of the brain is often attended with paralysis, and apparently its direct cause, is indeed sufficiently established; but the various and opposite results or phenomena just mentioned, assure us that our knowledge upon this subject, as in truth upon most other points of pathology, is but general and vague.

What has been hitherto said relates chiefly to hemiplegia. It would appear that paraplegia also is frequently dependant on cerebral disease. Paraplegia in adults, says Dr. Baillie, is by most pathologists considered as the result of some disease, "either in the bones or ligaments of the spine, or in the cavity of the spine most commonly at the loins, independently of any disease of the brain."† He denies the correctness of this opinion, and expresses his conviction that, like hemiplegia, this form of palsy "depends most commonly in adults, in a great measure upon a disease affecting the brain itself." The same sentiments appear to be entertained by Mr. Earle, Mr. Halford, and Mr. Copeland;‡ and several recent French writers have expressed similar views. Both Dr. Baillie and Dr. Abercrombie mention cases of paraplegia, in which, on dissection, the cause of the disease was discovered in the brain. In a strongly marked case the arachnoid was much thickened and opaque; the substance of the brain considerably softer than natural; vascular congestion of the pia mater, and a large quantity of serum in the lateral ventricles, as well as in the theca vertebralis, and between the membranes of the brain. Dr. Baillie thinks that the serum which is sometimes found in the theca vertebralis in this affection descends into it from the brain. We cannot doubt that paraplegia may sometimes be entirely dependant on cerebral disease; yet observation ren-

* Med. Repository, No. I. New Series.
† Loc. cit. p. 17.
‡ Med. Chir. Rev. December, 1820; p. 392.

ders it equally certain that disorder, lesion, or pressure upon the spinal cord, is even in adults very frequently the immediate cause of the paraplegiac affection; and in children this is unquestionably by far the most common source of the disease. In relation to the disease in adults, a great number of well authenticated dissections might be adduced presenting unequivocal evidence of its spinal origin; and facts illustrative of this point, in reference to the disease in children, must be familiar to every one. It has already been observed, that paralysis depending on disease of the brain, occurs almost universally on the side opposite to that in which the cerebral affection exists. Some exceptions indeed to this fact have been noticed by pathologists, but these are extremely rare. Mr. Bayle has collected from different authorities, eight cases in which palsy took place on the same side of the cerebral affection.* When paraplegia depends on disease seated within the head, the primary affection extends probably to both sides of the brain. This opinion is at least strongly countenanced by the phenomena developed on post-mortem examination. (Baillie.)

Partial paralysis depends on a great variety of causes, both of a general and local character. It may depend on disease within the head, on spinal affections, and disease or local injury of a particular nerve. The latter source of this form of palsy is probably the most common. Local paralysis is sometimes excited apparently by intestinal irritation in children. In cases of this kind, the palsy is usually confined to one of the arms.† I have seen cases of palsy of the arm in young children, which appeared to have been occasioned by the irritation of worms in the bowels.

Much attention has, within a few years past, been bestowed on local paralysis of the muscles of one side of the face. It appears from the researches of Shaw and Bell, that this variety of palsy depends most commonly on some injury of the *portio dura* of the seventh pair; and in some instances, also on a diseased condition of that part of the brain which gives origin to this nerve.‡ The occasional causes of this variety of palsy are, inflammation of the ear spreading to the portio dura; surgical operations about the ear and consequent injury of this nerve; disease of the temporal bone; tumours pressing on this nerve; *sudden exposure to cold*;§ injuries inflicted on the head; and disorganization and other morbid conditions within the brain implicating the portio dura. The paralysis

* Revue Medicale, Janvier, 1824.

† C. Bell. See Cook's Treatise on Nervous Diseases, p. 268.

‡ On Partial Paralysis. By John Shaw. Med. Chirurg. Transact. vol. xii. p. 1.

§ Dr. Powell. Transactions of the College of Physicians, vol. v.

in cases of this kind is not complete—the muscles of the face being deprived only of "the power of those actions which are to a certain degree involuntary, and to perform which it is necessary there should be a combination with the organs of respiration;" the sensibility, and those actions which are derived from the trigeminus, namely, the action of the orbicularis oris of the eyelids of the buccinators, and of the muscles subservient to mastication remaining undiminished. Mr. Shaw remarks, in the paralysis of the face after an attack of apoplexy, just the reverse condition in this respect obtains—the actions just enumerated as depending on the fifth pair of nerves being abolished; whilst those which are influenced by the portio dura remain unimpaired.

Among the exciting causes of partial paralysis, the poisonous influence of *lead* is the most remarkable. The tendency of this article, in whatever way it may be brought to act on the system, to produce paralysis of the muscles of the forearm and wrists is peculiarly strong, as is evident from the frequency of this affection in persons who work in lead mines, in plumbers, manufacturers of white led, painters and glaziers. There exists, however, much diversity, with regard to the constitutional predisposition of different individuals, to become thus affected by this article. Some persons appear to enjoy almost an entire immunity from its poisonous influence, although much exposed to its operation; whilst others are peculiarly liable to its effects.

Paralysis of the extensor muscles of the hands and wrists sometimes occurs, apparently from pressure of the nerves which go to these muscles. Cases of this kind generally come on during sleep, and seem to be occasioned by a particular position of the arm, while the head is resting upon it and compressing perhaps its principal arteries and nerves. I met with a case lately in a young gentleman who fell asleep while sitting at his desk. On awaking, he found that he could not extend the hand nor use the fingers; the palsy continued for four weeks before it yielded. Dr. Healy has published an interesting paper on this variety of palsy, in the third volume of the Dublin Hospital Reports.

The question why the power of motion is often entirely destroyed whilst that of sensation remains undiminished, has at all times greatly perplexed physiologists. Galen supposed that two sets of nerves were distributed to every part of the body—one to endow them with sensibility, and the other to give to the muscles the power of voluntary motion. What was thus alleged from mere theoretical views by this very sagacious physician, has been recently actually demonstrated by M. Magendie and Mr. C. Bell. The nerves which originate from the spinal prolongation of the brain, and which supply the

power of voluntary motion and sensibility, are composed of two packets of fibres, proceeding from distinct parts of the spinal marrow. It has been ascertained that, by dividing or compressing the posterior of the two fasciculi by which the spinal nerves originate, the sensibility of the part to which the nerves go is greatly diminished, whilst the power of motion remains unimpaired; and, on the contrary, if the anterior of these heads of the nerve be divided or materially injured, the power of salutary motion is destroyed in the parts to which it is distributed, but the sensibility remains unaffected. This physiological fact throws much light on the curious phenomenon in question, and may be regarded as full an explanation of it as anatomical investigations are capable of furnishing on any subject.

Treatment.—The prophylactic treatment of approaching hemiplegia does not differ from that which is proper for warding off an attack of apoplexy. In the apprehension of a stroke of palsy, a low diet, gentle exercise in the open air, and the avoidance of all kinds of stimulating liquors, as well as of full and heavy meals, should be enjoined; and the bowels kept in regular motion by gentle laxative medicines.

Where predisposition to apoplexy exists, and particularly when the ordinary premonitory symptoms of this affection occur frequently, a drain, by means of setons or issues established in the neighbourhood of the head, will contribute materially in obviating the paralytic seizure.

Much discrepancy of opinion has been expressed with regard to the value of blood-letting in hemiplegia. Some speak strongly in praise of its powers; whilst others condemn its use as often decidedly injurious. An attention to the various pathological conditions of the brain in cases of this disease, must at once show the folly of sweeping declarations either in favour or against this measure. We meet with cases, for instance, in which there are unequivocal manifestations of sanguineous engorgement in the vessels of the head; and with others, in which the face is pale and shrunken, and the pulse small, weak, and irregular. The immediate cause may consist in vascular turgescence with sanguineous extravasation into the brain; or in a slow disorganization of a portion of this organ, with little or no engorgement or inordinate action of the cerebral vessels. The *pulse must be our guide in the employment of this evacuation.* If the artery beats strongly and is full and hard under the finger, blood should be drawn freely and promptly as in apoplexy, until the momentum of the circulation is adequately moderated. When, on the other hand, the pulse is weak, the extremities cold, and the face pale and contracted, as it will sometimes be in old, weak, and nervous individuals, blood-letting to any considerable extent is

just as obviously contraindicated. In a few cases, I have abstracted from forty to fifty ounces of blood in the course of twelve hours after the hemiplegiac attack with decided benefit; but I have met with cases also, in which even a moderate bleeding brought on faintness and alarming weakness without any favourable impression on the paralytic affection. Of course, even where the state of the circulation indicates the propriety of this evacuation, regard must be had to the age of the patient, his constitutional habit, and perhaps the nature of the exciting cause.

Purgatives are as useful here as in apoplexy. In no instance, whether the action of the pulse be strong or weak, can evacuants of this kind be properly omitted. "All writers," says Dr. Cook, "agree as to the propriety of keeping the body open in hemiplegia. The neutral salts and other purgatives of the refrigerant kind, may be given where there is much determination of blood to the head and in full habits; but in debilitated, leucophlegmatic, and dropsical cases, the more stimulating purgatives, such as aloes, calomel, scammony, colocynth, jalap, &c. may with more propriety be administered." An excellent mode of giving purgatives in habits of this latter kind, is to administer them in combination with powdered mustard. From ten to twelve grains of calomel, mixed with about twenty grains of mustard, and succeeded in about three hours by a dose of infusion of senna, will rarely fail in such cases to procure free and copious evacuations. In relaxed and sluggish habits, cathartics will almost always operate with more certainty and force when given with a stimulant of this kind. I have frequently, under such circumstances, administered a small portion of Cayenne pepper with purgatives with excellent effect.

Emetics also are much recommended by some writers in the treatment of hemiplegia. In recent instances, ushered in by apoplectic symptoms, and particularly in robust and plethoric subjects, they are of doubtful propriety. When hemiplegia comes on during a dyspeptic condition of the stomach, or soon after taking food of difficult digestion, an emetic may, no doubt, prove very serviceable. At a more advanced period of the disease, when the momentum of the circulation is moderate and no symptoms of cerebral congestion exist, emetics will occasionally do much good, and may be freely employed with but little risk of doing mischief.

In addition to the general remedies already mentioned, revulsive applications constitute important auxiliaries in the treatment of this affection. In recent cases, blistering or cupping the nape of the neck and sinapisms to the ankles, will sometimes contribute materially to the removal of the disease.

Stimulating enemata also are highly recommended in this

variety of palsy; and I have myself witnessed several instances of their good effects.

In paraplegia attended with symptoms of cephalic disorder, besides the local applications just mentioned, Dr. Baillie recommends the use of calomel, or the blue pill in union with squills, together with purgatives. He directs a grain of calomel, or five grains of the blue mercurial mass with one grain of dried squills every night for several weeks, with an occasional dose of one of the neutral purgative salts.

When paralysis continues until all symptoms of undue determination to the head have disappeared, or the disease has assumed a strictly chronic character, antiphlogistic and depletory remedies are no longer appropriate means. Exciting remedies, both internally and externally employed, must now be resorted to. Frictions, stimulating liniments, sinapisms, blisters, stimulating baths, cold affusions, electricity and galvanism, are the principal external exciting applications; and, under proper management, often prove decidedly beneficial. Frictions with the flesh-brush or a piece of dry flannel, will sometimes answer better than the more exciting or rubifacient applications. These frictions should be made twice or thrice daily, and continued each time at least half an hour. Along with dry frictions the occasional application of blisters to the leg and wrist of the affected side may prove beneficial. Where the palsy is complete, however, the sinapisms or blisters should not be left on too long lest gangrene and sloughing be produced. A conspicuous rubifacient effect is all that it will in geeral be prudent to excite in causes of this kind. Cullen indeed observes, that when external stimulants produce violent inflammation, they are apt to do less good than when they act merely as rubefacients, or at most, create but a moderate degree of superficial inflammation. Anciently the application of nettles was much recommended; and from the very pungent irritation they produce in the skin, they may, no doubt, be serviceable. I have known the application of *dolichos pruriens* to a paralytic limb to be of manifest advantage.

Electricity being peculiarly adapted to excite the nervous system, has been much employed in the treatment of paralytic affections; and, under judicious management, it will sometimes do much good. I have known several cases of local palsy completely cured by this agent; and the records of medicine furnish us with no small number of instances in which it was successfully employed. It would appear, however, that it has sometimes proved decidedly injurious. Mr. Cavallo observes, that electricity has not only often proved wholly inefficacious in paralysis, but in some instances, highly pernicious and even fatal. It would seem probable, however, that where its effects have been attended with unfavourable or fatal consequences,

it was applied in too powerful a manner; for it is now admitted, on all hands, that it proves most beneficial when it is moderately and repeatedly applied. Shocks should never be given. The electric fluid must be passed through the affected part without sparks, by means of wooden points; or, at most, by discharging but very weak sparks into it from the prime conductor. Dr. Cook remarks, that this agent "is only to be considered safe when its operation is confined to parts somewhat remote from the head;" and that it is most apt to prove injurious when the disease depends upon disease or compression of the brain.

Galvanism also has been particularly recommended for the treatment of this affection; and is said to be safer, and in general, more effectual than electricity. Dr. Bardsly, from considerable experience in the use of galvanism in paralysis, concludes, that if no sensible benefit arise from a steady and well-regulated application of this influence, after a trial of a week or ten days, its use ought to be discontinued; that when the brain forms a part of the galvanic circle, it is to be very cautiously employed; and that when the activity and firmness of the pulse, as well as the temperature of the affected part are increased—the corporeal and mental feelings somewhat enlivened, and the secretions improved, we may persist in the application of this agent with a prospect of ultimate and permanent advantage. When the affected parts are so torpid as to render them insusceptible of the galvanic stimulus, the cuticle ought to be removed by a small blister, and the metallic points applied to the raw skin. (Bardsly.*)

Moxa has been used with success in paralysis. Dupuytren has reported a case of general paralysis, in which moxas applied on each side of the spine, near the first and second dorsal vertebra, procured immediate benefit. Larrey mentions a case of palsy from disease of the spine which was cured by thirty-two applications of moxa; and two other cases of paralysis of the forearm from gun-shot wounds yielded completely to this remedy. He also states, that he cured several cases of paralysis of the muscles of one side of the face from cold, by the application of moxa; but he observes that the application of moxa to this part is dangerous, unless the cones of cotton are small, and suppuration be prevented by the application of ammonia.† The instances on record of the successful application of moxa in paralysis are, indeed, sufficiently numerous to entitle this remedy to particular attention in the treatment of this affection.

* Medical Reports, p. 183. Cook, l. c. p. 296.

† Recueil de Memoires de Chirurgie. par le Baron D. L. Larrey, p. 94.

Internally a variety of remedies have been recommended for the cure of this disease. Among these the *nux vomica*, or its preparation *strichnine*, has of late years been a good deal used in palsy, and occasionally with decided benefit.* Mr. Purcell has recently reported a case of paraplegia, in which this article, in conjunction with the application of moxa, was successfully used.† My own experience with this remedy in paralysis has by no means been encouraging; but there can be no question of its occasional usefulness, although it seems now to be generally admitted that it is also frequently pernicious. When the peculiar convulsive motions which result from the operation of this narcotic, appear early in the *palsied limb*, in connexion with transient tremours, formication, and free perspiration in this part, and particularly if these affections do not directly pass to the sound parts, the prospect of benefit from this remedy is said to be considerable. In paralytic affections connected with an inflammatory or congested condition of the brain or spinal marrow—and in hemiplegia from sanguineous extravasation into the cerebrum, this remedy cannot be employed without considerable risk of injurious consequences. From two to four grains of the nut may be administered three or four times daily, until spasmodic motions of the extremities ensue, or gastric distress is experienced. The extract is given in doses of from two to three grains; and of the strichnine, which has latterly been used, one-sixth of a grain may be exhibited thrice daily.

Somewhat analogous to the nux vomica is the *rhus toxicodendron* in its occasional effects in paralytic disorders. This article was formerly highly extolled for its remediate powers in affections of this kind, and in Germany it has lately again attracted considerable attention in this respect.‡ In two in-

* Decaudolle, Husson, Dumeril, Lescure, Asselin, Magendie, Bricheteau, and Fouquier, have reported cases in which the happiest effects were produced by the use of this remedy in palsy. M. Fouquier gave the nux vomica to the extent of from four to twenty-four grains of the powder daily to an habitual drunkard affected with hemiplegia from apoplexy; and in the course of one month he was entirely cured.

† Medico-Chirurg. Rev. November, 1829, p. 203.—Prov. Med. Gazette, No. XI. July, 1829.

‡ M. Dufresnay, Professor of Botany at Valencia, was, I believe, the first who used the rhus toxicodendron in palsy. Mr. Alderson, an English physician, next published a small work on the medical effects of this article, in which he relates seventeen cases which were more or less benefited by its use. Dr. Horsefield, in his inaugural dissertation on different species of rhus, published in this city in 1798, testifies to its usefulness in paralytic affections. Mangrat, (Journ. de Phys. Chim. d'Histoir. Nat. vol. li. p. 370.) Elz. (Dissert. de Toxicodend., 1800.) Hunold, (Piepenbrings' Archiv. f. Pharmacie. Bd. i. st. iii. p. 276.) Kok. Van Mons. Augustin, (Asklepeion, 1811, No. IV. s. 57.) Sybel, (Asklepeion, 1811, No. XXXII. p. 497.) Gisovious, (Rust's Magazine, Bd. xiv. s. 386.) D'Al-

stances of hemiplegia I prescribed the saturated tincture of the leaves of the rhus with unequivocal benefit. In a letter to me from professor Osann of Berlin, I am informed that the following mixture has been used with decided benefit at the Polyclinic Institute, in paralysis of the lower extremities:

R. Tinct. rhois. toxicodend. ℥ss.
——— aconiti ———
——— guaiaci. volat. āā ℥ii.
M. S. Take forty drops every three hours.

The effects of this article are often very similar to those which result from the full operation of the nux vomica. In one of the cases in which I used it the patient experienced occasional convulsive actions in the muscles of the palsied limb, with a sensation of tingling or prickling in the affected part. The powdered leaves may be used, commencing with half a grain, and gradually increasing it to four grains, three times daily. The effects of this article when given in large doses, are headach, vertigo, nausea, and sometimes profuse diarrhœa, and when these manifestations of its operation ensue its use must be discontinued.

The oil of turpentine is strongly recommended by Dr. Prichard, (Med. Repos. No. I. new series,) in paralytic affections, after the necessary depletory measures have been adequately pursued. He gives it in doses of from one to two drachms, three times daily. Mr. Manson has related several striking instances of the successful use of iodine in paralytic affections.*

The *flores arnicæ* appear to have been frequently used with entire success in cases of this kind. They are said to be particularly useful in paralysis of the bladder,† and in local palsies of the organs of sense. Richter indeed says that they may be used with occasional success in almost every variety of palsy. Hufeland states that he cured a case of scrofulous deafness with this article, in conjunction with antimonials.‡ Within the present year I prescribed this remedy in an instance of hemiplegia, which came on very gradually in an elderly female, and its effects were very manifestly beneficial.§

quen, (Harles Rhein-Westphal. Jahrb. ect. Bd. x. st. i. s. 135.) Osann, (Hufeland's Biblioth. d. Heilkund, 1823, Mai. s. 324.) Buchheim, (Allgem. Med. Anual. 1825.) Hennin (Archiv. fur Med. Erfahr. V. Horn, ect. 1823, Nov. and Dec. s. 393,) have all published cases illustrative of the remediate powers of this article in different forms of palsy.

* Medical Researches on the Effects of Iodine, &c.—Lond. 1825, p. 87—90.

† Hufeland's Journal. Bd. ix. st. iii. p. 95.

‡ Ibid. Bd. xxxiv. st. v. s. 33.

§ The arnica is highly extolled for its virtues in paralytic affections by Junker, Colin, Plenk, and others. (Cook.)

The internal use of *mustard seed*, and of *horse-radish*, have also been recommended in paralysis ; and I have known the former of these articles prescribed by the late Dr. Barton in the Pennsylvania Hospital with much advantage. A number of other remedies are said to have been employed with success in various forms of palsy. Cantharides in substance, "in the dose of one grain to a scruple of volatile salt, and gradually increased to two grains of the former and forty of the latter, every three hours," have been employed with decided benefit. (Cook, Med. Comment. vol. xiii. p. 96.) Dahlberg and Kolpin speak highly of the effects of the *tincture of colycinth*,* in doses of ten drops every two hours, and gradually increased to sixty or seventy drops. The *chenopodium ambrosioides* is said to have produced excellent effects in *aphonia* from paralysis of the muscles of the larynx.† It is given in substance, in doses of from a scruple to half a drachm, twice or thrice daily. Jahn (Klinik. der Chron. Krank. B. i. p. 365,) says the belladonna is one of the most efficacious remedies in paralysis. Besides the foregoing remedies, almost every active tonic and stimulant has been recommended in such affections—phosphorus, camphor, volatile salts, valerian, bitters, chalybeates, the essential oils, savin, &c. have all found advocates as remedies in paralytic affections, but they deserve little or no attention in this respect.

In that variety of local palsy which arises from the poisonous influence of lead ; the use of mercury, so as to produce moderate ptyalism ; in conjunction with the repeated application of blisters, or other active, irritating substances to the wrist ; and the use of the splint or battledore, recommended by Dr. Pemberton ;‡ with mild aperients, and occasional warm-bathing, constitute our most useful remediate means. Dr. Gregory is not willing to attribute any powers to mercury against this affection, notwithstanding the authority of Dr. Clutterbuck in its favour. I have met with one case in which gentle salivation, with local stimulants to the palsied parts, succeeded in removing the disease. It is not improbable, however, that the chief advantage in this instance was derived from the local irritating applications.§

In *paralysis of the tongue* we may direct the patient to chew the root *pyrethrum*, or other irritating and pungent substances ; such as cloves, senega, squills, pepper, calamus aromaticus,

* Hufeland's Journal. Bd. ii. st. iv. p. 570.

† Borries—Ibid. Bd. xiv. st. ii. p. 201.

‡ This consists simply in applying a carved splint to the inner side of the arm, so that the broad surface supports the hand.

§ A gentle mercurial action is recommended for the cure of this variety of palsy by *Hunter* and *Dr. Clarke*. Dr. Clutterbuck regards it as the most effectual means we possess in this affection.

&c. The oil of cajeput has also been recommended in this variety of local palsy. A few drops of it are to be put on the tongue three or four times daily. Blisters, or frictions with tartar emetic ointment under the chin and ears, may also be used; and a very moderate excitation of the tongue by the galvanic influence, which may be done by two flat pieces of silver and copper, the one applied to the upper, and the other to the under surface—the parts projecting from the mouth being brought in frequent contact. In *partial paralysis of the face*, cupping, leeching, and blistering over the origin of the portio dura, mercurial purgatives, and a seton in the neck, may be accounted the most efficient remediate measures. Dr. Delafield, of New-York, has related several instances of this affection which yielded under the employment of these remedies.* I have known a case of this kind, produced, or at least accompanied, with indurated swelling of the parotid gland, cured by the use of iodine.

CHAPTER IV.

AMAUROSIS.

This disease consists in a diminution or total loss of sight, from impaired or abolished sensibility of the retina to the impressions of light, or from decreased or lost power in the optic nerve to convey the visual impressions from the retina to the sensorium commune.

This impairment, or loss of sensorial function of the optic nerve, and its expansion, may depend either on organic disease of the retina, optic nerve, and thalamus, or merely on functional torpor, or palsy of these parts, without any perceptible structural lesion. Among the *organic affections* of the optic apparatus, which give rise to this disease, the following are the principal: Extravasation of blood; opacity; structural lesion, and deposition of lymph upon the surface of the retina; fungous, or other morbid growths; dropsy, and atrophy within the eye; and all such disorganizations as directly oppress or derange the texture of the retina; and lastly, morbid conditions within the head, oppressing or disorganizing the optic nerve or its thalamus—as sanguineous or serous effusions, tumours, suppurative destruction in the vicinity of the optic nerve or its origin, and thickening, atrophy, absorption or ossification of its sheath.†

* New-York Med. and Phys. Jour. Dec. 1824.

† Travers. Synopsis of the Diseases of the Eye, p. 141.

The causes which are capable of suspending or destroying the functional powers of the retina and optic nerve, independent of perceptible organic change, are extremely various. Functional torpor of the optic apparatus may depend either on vascular turgescence of the retina of the sheath of the nerve, or of its thalamus, or on deficient arterial circulation in these parts; or finally, it may be the result of an idiopathic paralysis, or loss of sensorial power of the retina and its nerve.

When the *organic* disorder that produces the amaurosis is seated in the eye-ball itself, several or all of the following phenomena accompany the disease:—namely, dilated pupil, its contracting power being feeble or null; congestion of the veins of conjunctiva; a bluish grey tint of the sclerotica; loss of regular shape of the globe of the eye, the sides either bulging out or appearing flattened; a turbidity or milkiness in the posterior chamber of the eye, "resembling the humours in the eye of the horse." In many instances of *organic* amaurosis, a small circular spot of a pearly or greenish yellow colour may be seen at the fundus of the eye, a small distance from the visual axis.* When the disease is the consequence of inflammation of the retina or choroid coat, and the inflammatory action has entirely subsided, we usually find the conjunctival veins varicose, the iris discoloured, thick, very vascular, and inelastic; the bulk of the crystalline lens diminished, or liquefied and discoloured, with opacity and deep yellow colour of the vitreous humour. (*Travers.*) In such cases there is usually a feeling of tension, and at times of uneasiness, but rarely any distinct acute pains in the globe of the eye, and the sclerotica becomes thinner and semitransparent, admitting the reflection of the vascular texture of the choroid coat, which occasions the above-mentioned bluish grey tint of the sclerotica. (*Stevenson.*) In some cases of organic amaurosis, an opake white spot, or *projecting whitish* substance, may be seen on some part of the concave surface of the retina when the eye is examined in a good light. This constitutes the medullary fungus of the retina, which in the progress of the disease involves the eye in one undistinguishable disorganized fungous mass.

Functional amaurosis, as has just been said, sometimes depends on vascular turgescence of the optic apparatus. In such cases the pupil is dilated, sluggish in its motion, or immovable; more or less strabismus, ptosis, or double vision of the affected eye often exists; the carotids beat strongly; the face is apt to be flushed; a sense of fulness and tension in the globe of the eye is felt, with pain and a feeling of pressure of the

* "This appearance has been attributed to a circumscribed opacity of the retina, answering to the porus opticus. Others have supposed it to be the maculæ lutea of Sœmmering. It is, however, with more propriety ascribable to a diminished secretion of the black pigment."—*Stevenson on the Nature, Symptoms, and Treatment of Amaurosis.*

scalp; occasional ringing in the ears; disorder and irritability of the stomach; and somnolency. Luminous sparks or flashes appear before the eyes, particularly on stooping, straining, or on first lying down. (*Travers.*) These cases sometimes come on suddenly. Mr. Stevenson has known several instances in which the patients went to bed apparently well, and awoke with more or less complete loss of sight in one or both eyes.

Functional amaurosis from depletion occurs sometimes immediately after excessive hæmorrhages, particularly uterine floodings. In this variety, as in that which arises from vascular congestion, the pupil is dilated and immovable, and there is usually deep-seated pain in the head, and occasional vertigo. This pain is attended with a feeling of circumscribed pressure on some part of the brain, accompanied sometimes with a jarring noise "like that of a mill or threshing floor." In cases resulting from this cause, there exists in fact strong vascular congestion in the head; for there is no pathological fact better established, than that strong determinations to the head often supervene as the immediate consequence of excessive sanguineous discharges.* It is of much importance to distinguish this from the former variety in a therapeutic point of view;—for, amaurosis from excessive sanguineous evacuations, is always increased by even small abstractions of blood; whereas that which is attended with a plethoric state of the system demands sanguineous evacuations.

Symptoms.—Functional amaurosis usually comes on very gradually. The patient at first complains of some weakness of sight. When he looks at small objects, as, for instance, the letters of a book, he finds that his vision is variable and irregular—the letters "being at one time more distinctly visible than at another, the sight of which he alternately loses or regains by shutting or rubbing his eyes, or by moving his head in different directions." Sometimes the approach of the disease is announced by a peculiar dimness of sight, as if a fine piece of gauze or spider's web were held before the eyes; at others, by the perception of spots, threads, or other imaginary appearances floating in the air a short distance from the face; and at a more advanced stage of the disease, coloured spectra, or luminous impressions of objects remaining upon the retina often occur. Sometimes the objects looked at appear to have a tremulous or wavering motion. Connected with these symptoms there is generally more or less pain in the head and temples, diminishing in proportion as the dimness of vision in-

* See the observations of Marshall Hall on this subject in his "Medical Essays." The experiments of Dr. Seeds on the effects of excessive abstractions of blood in animals.—*Med. Chirurg. Jour.* No. VI. p. 107.

creases, and ceasing altogether when the amaurosis is complete. When the pain continues severely, with but slight remissions, and is readily aggravated by whatever excites the system, we may presume that it is connected with *organic* disease within the brain; and such cases are almost invariably accompanied by torpor of the bowels; gastric derangement; disposition to lethargy; occasional confusion of mind; indisposition to corporeal or mental exertion; and paralysis in one or more of the muscles. In some cases, very severe spasmodic pains occasionally shoot through the eye into the head, coming on every night or second night about the same time, and continuing an hour or two, and "is accompanied with convulsive quivering of the muscles of the eye and eyelids, and profuse lacrymation."

Some patients affected with incomplete functional amaurosis, see more distinctly on first waking in the morning; and in others, the sight is clearest in the evening. (Travers.) When one eye only is affected, the iris, in functional amaurosis, will generally act in accordance with that of the sound organ, "provided both be allowed to remain open at the same time; but if the latter be closed, the pupil of the diseased eye will be found to have lost its power of motion on the admission of the usual degrees of light."* In the majority of cases, the pupil is dilated and immovable; and frequently misshapen or irregular. It is sometimes smoky or clouded, or dark grey or greenish grey, and occasionally of a reddish or yellowish white appearance.

Diagnosis.—Immobility and dilatation of the pupil furnishes no certain evidence of amaurosis. In some cases of complete amaurosis, though indeed very rarely, the pupil acts regularly; in others, it retains its ordinary size, but is motionless;† and in others, it is fixed and contracted.‡ Moreover, the ciliary nerves may be paralized, occasioning enlargement and immobility of the pupil, without amaurosis. Among the symptoms which may aid us in distinguishing amaurosis from *cataract*, writers particularly mention the different appearances which the flame of a candle presents to persons labouring under one or the other of these diseases. To a person affected with the latter disease, the flame of a candle appears as if it

* Loc. citat. p. 68.

† M. Travers is of opinion that, in cases of complete amaurosis where the pupil is of the natural shape but motionless, the retina has, most probably, undergone some structural change.

‡ When this is the case, says Mr. Stevenson, the disease is generally the result of inflammation of the internal occular textures, and is usually attended "with an angular or irregular form of the pupillary border in one or more points of the circumference, and with an opacity of the capsule of the crystalline lens."

were surrounded with a uniform thin mist or white semitransparent cloud; to one labouring under the former affection, an iridescent halo seems to encircle the flame or to emanate from the mist. In imperfect amaurosis, the faculty of vision is occasionally increased or diminished "under different states of the circulation, as influenced by a full and stimulant meal, by which some find their sight improved, others greatly deteriorated. Enlivening or distressing mental emotions and other physical causes that have a tendency to excite or depress the energy of the nervous system, have a correspondent effect in affording temporary benefit, or in causing diminution of vision, *which does not occur in cases of incipient cataract.*"

Prognosis.—Those cases which depend on organic lesion may be regarded as incurable; where, with total loss of sight, the iris is immovably dilated, or preternaturally contracted, accompanied with violent pain in the head, or eye, or cranium; when the disease occurs as a consequence of apoplexy, blows on the head or eye, syphilis, or protracted internal ophthalmia; and in cases where the above-mentioned whitish projection appears at the bottom of the eye, little or no hopes of a cure can be entertained.

Where, on the contrary, the amaurosis is not complete, and no severe and protracted pains in the head or eyes, or sense of constriction in the eye-ball accompanies the development of the disease; and where at the same time the pupil retains its natural shining black colour, and some degree of sight still remains, there is reason to expect relief from remediate management. Periodical amaurosis also, unless of very long standing, is of a favourable character; and in general, all those instances of the disease which are purely functional or symptomatic of visceral irritation, or metastasis of gout, rheumatism, &c. may be regarded as susceptible of being cured.

Causes.—When amaurosis is not the result of organic or structural disease of the optic apparatus, it arises probably, in most instances, from *pressure* on some portion of the visual nervous texture. Even in those cases which occur in consequence of excessive losses of blood, vascular turgescence, and pressure of the retina, optic nerve or its thalamus, is, perhaps, the immediate cause of the disease. I have already adverted to the great tendency to cephalic congestion in that exhausted state of the system which results from profuse hæmorrhage, and in this state, vascular congestion of the capillary vessels of the retina and consequent pressure of this structure may, it is to be presumed, readily occur. It may, nevertheless, in some instances, depend also on mere functional torpor from previous over-excitation of the retina and optic nerve, or from the vitality of the nerve being too much depressed.*

* Weller. Manual of the Diseases of the Human Eye.

It would appear from the observations of pathologists, that persons who have dark-brown, blue, or black eyes, are in general much more liable to amaurotic affections than such as have light-coloured or grey eyes. It has been stated, that the proportion of instances of this disease in dark-eyed persons, is to that of the cases which occur in individuals with light or grey eyes, as twenty-five to one.*

The *exciting causes* of amaurosis are very various. It may depend on *metastasis* of other affections, particularly of gout, and from the sudden suppression of habitual sanguineous or serous evacuations; as of the catamenial or hæmorrhoidal discharges; the healing up of old ulcers; and the sudden retrocession of cutaneous eruptions; and of habitual perspiration of the feet.

It is sometimes *symptomatic* of hysterical, epileptic, hypochondriacal, and other nervous affections, (Beer;) arises from the excessive use of narcotics, as well as from the poisonous influence of lead; is the result of abdominal irritation, from a *loaded state of the bowels*;† suppressed, or deranged, or excessive secretions in the liver, kidneys, or uterus; intestinal worms; and dyspeptic affections. Sudden mental emotions, particularly rage, terror, and protracted grief, sometimes produce this disease. The sudden suppression of the secretion of milk in the puerperal state has produced it; and it has arisen from rapid and copious salivation; from excessive venereal indulgence, particularly habitual self-pollution; from intoxication; and from the sudden influence of cold. Among the most common external causes of amaurosis is intense application of the eye to the inspection of minute and bright objects‡—which Mr. Stevenson thinks, tends to produce preternatural vascular turgescence in the retina and choroid coat. It may also be occasioned by falls or blows on the head; insolation; straining in parturition; evacuating the feces; or lifting—in short, by whatever is capable of causing preternatural sanguineous determinations to the head.

Treatment.—When amaurosis arises from organic disease

* Jahn's Klinik der Chronischen Krankh. Bd. v. p. 295.

† Dr. Wishart has related an interesting case of amaurosis in the Edinburgh Medical Journal for July, 1825, which was manifestly the consequence of intestinal irritation from indurated fecal matter.

‡ "Hence the frequency of weakness of sight among silk stocking weavers, milliners, embroiderers, and other mechanics and artists whose occupations oblige them to exercise their visual organ with too little intermission and variety, in looking intently at their delicate, light-coloured, and highly-illumined manipulations. Persons addicted to read, write, or perform much fine needle-work by the aid of candles, and what is much worse, by the brilliant and artificial light of lamps, rarely fail, if their organ of vision be constitutionally feeble, to discover, sooner or later, the greater or less decay of sight."—*Stevenson. Loc. cit.* p. 121.

of the visual organ, or the brain; or from epilepsy, or in consequence of violent forms of fever and other acute constitutional diseases, nothing is to be expected from remediate treatment. The functional or symptomatic varieties of the disease, however, will often yield under a proper course of management.

The treatmeat of amaurosis must of course be modified according to the nature of the occasional cause; and the removal of the primary irritating cause ought to be the first object in prescribing for this disease. Mr. Travers remarks that the treatment of amaurosis is almost entirely constitutional; and he attaches no value to the external application of stimulating vapours, lotions, ointments, and etherial embrocations, &c. although setons, leeching, and *blistering* are important auxiliaries. Upon this point, however, Mr. Stevenson, as well as many others, differ widely from Mr. Travers. The former agrees with Mr. Ware in regarding *errhines* as often particularly useful in chronic functional amaurosis; and he thinks favourably of the use of stimulating applications to the eye in cases unattended with fever, or local vascular irritation in the eye.

When the momentum of the circulation is preternaturally increased and the eye is somewhat tender and irritable, and particularly when the habit is robust and plethoric, the treatment should be commenced by both general and local abstractions of blood. "Bleeding in the early stage of *acute* amaurosis," says Dr. Stevenson, "is the sheet-anchor of our hopes. It should be repeated," he says, "at short intervals, until the violence of the symptoms shall have been moderated."

Immediate attention must also be paid to the bowels. So long as the general habit is phlogistic, *free purging* with calomel, succeeded by a portion of Epsom or Glauber's salts, should be practised every second or third day, and antimonials in nauseating doses administered during the intermediate time. In relation to the employment of sanguineous evacuations in this affection, Mr. Travers observes, that although obviously proper in cases attended with general plethora and cerebral compression; yet where the undue determination of blood to the eye is attended with diminished tone of the vessels of this organ—a circumstance very common, he says, after deep-seated inflammation, or irritation and relaxation from over-excitement—depletion is always decidedly detrimental.

In cases of recent imperfect amaurosis making rapid progress, and attended with signs of obscure inflammation, the employment of mercury, so as speedily to produce soreness of the gums, *but not salivation*, will sometimes suddenly arrest the disease. Mr. Travers asserts that salivation does no good, and may readily prove hurtful. "When mercury is benefi-

cial," he says, "its efficacy is perceived as soon as the mouth becomes sore." When the pupil shows a disposition to contract, or has actually formed adhesions with the capsule of the lens, the application of belladonna, or stramonium in solution to the eyes, says Mr. Stephenson, "must on no account be omitted," in order to prevent permanent contraction and obliteration of the pupil.

The light should be excluded from the eyes where there is tenderness and irritability of the organ; and all kinds of compressing or tight bandages be carefully avoided.

When the local and general excitement has been moderated, or where the disease from the beginning is free from manifest general vascular irritation, revulsive applications, particularly *blistering*, or a *seton* on the nape of the neck, and leeching at the temples and around the eye may be resorted to with advantage. In conjunction with the occasional employment of these external means, alterative and aperient remedies should be regularly used until there is reason to think that the healthy condition of the visceral functions is restored. For this purpose a great variety of remedies has been recommended, but the use of four or five grains of blue pill with two grains of ipecacuanha at night on going to bed, and a dose of rheubarb, or of the compound extract of colocynth every second or third day, will probably do all that can be effected in this respect.* Benefit may also be derived with this view, from the frequent use of very minute portions of tart. antimony dissolved in an infusion of sarsaparilla, or of the root of burdock (*arctium lappa.*) A grain of this antimonial may be dissolved in a pint of infusion, and drank in small portions throughout the day. If the visceral functions have been brought to a healthy state, and there is an entire absence of general and local vascular irritation, recourse should be had to tonic remedies, such as arsenic, bark, iron, and the mineral acids.

The eyes should be kept in a state of repose; and the patient be directed to take gentle exercise in the open air when the weather is dry; to use a nutritious but digestible diet, the cold bath, and regular rest.

* Schmucker's visceral pills were formerly much employed in Germany for the cure of this disease. They are made according to the following formula. R. G. Sagapen.—Galban.—Sapo. venet. āā ʒi. Pulv. Rhæi ʒiss. Tart. Emetic gr. xvi. Succ. Glycyrrh. ʒi. Fiant. pill, singul. gr. v. Of these pills three are to be taken every morning and evening for a month. Richter recommends the following pills: R. G. Ammon.—Assafœtid.—Sapo. venet.—Rad. Valerian.—Sumitat Arnicæ.—āā ʒii. Tart Emetic, gr. xviii. Fiant. pill, sing. gr. v. Six to be taken thrice daily for three or four weeks. The following combination forms an excellent purgative for this purpose: R. Massæ Hydr. ʒi. G. Aloes ʒss. Tart. Antim. gr. ii. Fiant pill, No. xx. Take one every night on going to bed.

When amaurosis is strictly chronic, or devoid of general or local irritated action, general depletion is not only useless, but frequently pernicious. Small abstractions of blood, however, by means of leeches, will sometimes be useful by relieving the local congestion in the affected organ. In cases of this kind, much advantage may be derived from a seton in the back of the neck, or from the repeated application of blisters to that part. To lessen sanguineous congestion in the eye, some writers recommend the use of errhines, and there can be no doubt of their occasional beneficial influence, by the irritation they produce in the immediate vicinity of the affected organ, as well as the consequent increased discharge from the mucous membrane of the nose. Some advantage may also, at times, be derived in cases of this kind, from stimulating applications directly to the eye; such as the *ungt. hydrarg. nitrat.*, the vapour of volatile alkali; weak infusion of capsicum; vinous tincture of opium, &c. *Electricity* does not appear to possess any particular remediate powers in this affection; and it is said to be even frequently injurious. Mr. Travers has not seen a single instance of benefit derived from electricity.

Emetics were formerly much recommended in the treatment of amaurosis, not only for the purpose of evacuating the stomach, but also with a view to their general influence upon the nervous and sanguiferous systems. Mr. Travers does not speak favourably of their effects in this disease. Richter, on the other hand, gives the most favourable account of their influence in amaurosis. That they have been employed with success in some instances is unquestionable, and under peculiar circumstances may, do doubt, be again used with advantage; although they are certainly not so efficacious as they were formerly represented to be by physicians of high authority.

In complete amaurosis of a chronic or asthenic character, the German writers recommend exposing the eye to a bright light, and even to the direct rays of a meridian sun, with a view of stimulating the palsied retina. Mr. Stevenson says, that he has heard of an instance of the success of this practice; although his own experience does not furnish him with an example of its usefulness. Mr. Stevenson recommends *dry cupping* applied to the ball of the eye and its appendages. "By carefully fixing a well adapted strong glass, fitted with an exhausting syringe upon the edges of the orbit, the instrument may be made capable of exerting a more or less powerful influence upon the organ of vision, in proportion to the extent to which the atmospheric air contained in the cupping-glass is exhausted. The effect of this application is to occasion a great redness and tumefaction of the eye-lids; an immediate distention of the conjunctiva; and a bulging forward or protrusion of the whole globe of the eye, the obvious tendency of which

must be to relieve the deep-seated vessels." He mentions a few cases in which this practice was employed with the most decided advantage.

Some modification in the treatment will, of course, always be made by the judicious practitioner, according to the occasional cause of the disease. Thus, when the disease appears to be the consequence of suppressed hæmorrhoidal discharge, aloetic purgatives, stimulating enemata, and leeching around the anus are indicated. If it be the result of an arthritic or rheumatic diathesis, advantage may probably be obtained from the internal use of the *tinctura guaiaci* or colchicum, and sinapisms or blisters to the ankles. In instances that arise from a syphilitic irritation, a slow mercurial course with infusion of sarsaparilla, &c. will be particularly indicated, and the same remedies are to be relied on where manifest hepatic disorder is present. If suppressed perspiration lie at the bottom of the disease, the warm bath, diaphoretics, particularly antimonials, both in nauseating and emetic doses, will be appropriate means. In short, the practitioner should always endeavour to ascertain the cause of the disease, and to counteract or remove this cause, if possible, by an appropriate course of remediate management.

CHAPTER V.

EPILEPSY.

Epilepsy, whether considered in its immediate phenomena or in its remote consequences, is unquestionably one of the most distressing and deplorable of human maladies. Its tendency to impair the understanding, to produce hebetude, and even total abolition of the rational powers, leads often to a condition infinitely more lamentable than death itself. So frightful and distressing a disease could not fail to attract the particular attention of the physicians of every age; and we accordingly find it minutely described, and its nature and treatment extensively discussed in the works of the Greek and Roman physicians.*

* Hippocrates describes epilepsy under the name of *morbus sacer*—a name which was given to it from its supposed origin; it being generally regarded at his day, as an infliction of the Gods, or of demoniac influence. Aristotle treats of it under the name of morbus herculius, be-

The soporose and convulsive affections are so closely allied to each other, both in relation to their general phenomena and their pathological character, that it is extremely difficult to give an unexceptionable definition of any one of them. Epilepsy may, perhaps, be defined a disease primarily seated in the nervous system, manifested by convulsions recurring at uncertain periods in paroxysms, accompanied by a temporary loss of consciousness, sense, and voluntary motion, and terminating in somnolency.

The epileptic attack sometimes comes on suddenly without any manifestations of its approach. More frequently, however, certain symptoms precede the occurrence of the paroxysm, and of these the following are the most common:—A peculiar confusion and distressing feeling in the head; an absent, wandering, and confused state of the mind; giddiness; dimness of sight; ringing and loud sounds in the ears; sparks and flashes of light before the eyes; distention of the veins of the head and neck; a trembling and feeling of restlessness in the extremities; an anxious feeling in the precordial region; restlessness and starting during sleep; loss of the power of distinct articulation; complete temporary deafness; and drowsiness. In some instances, there is a manifest change in the moral disposition a short time before the accession of the attack. Sullen gloominess with an irritable temper is manifested by some patients. In some cases, the mind falls into a kind of revery from which it cannot be drawn, which terminates often speedily in total insensibility. Some epileptics evince an unusually timid disposition; others are spiteful, resentful, and mischievous, shortly before the accession of the paroxysm. Occasionally, spasmodic twitches of particular muscles, especially in those of the face, precede the attack. Richter states, that painful sensations in certain parts of the body, particularly spasmodic pains in the stomach, with a rumbling noise in the bowels, occur as the precursors of the epileptic paroxysm.

The most remarkable of the premonitory symptoms of epilepsy, however, is that which is technically called *aura*. The sensation to which this term is applied, and which, I believe, occurs in no other disease, is compared by patients to the feeling which is communicated by a gentle stream of cool air directed on the part. This sensation generally commences in the feet or legs, and gradually ascends until it reaches the

cause Hercules is said to have been afflicted with this disease. The most common appellation of this affection among the Roman physicians, however, was *morbus comitialis*. We nevertheless find it mentioned also under various other names in their writings—such as *morbus sonticus*, *morbus caducus*, *morbus pueriles*, *morbus* insputatus, seleniacus, major, magnus, vitriolatus, mensalis, &c. In the sacred writings, epileptic persons are called *lunaticos*.

head, when the patient instantly becomes insensible and epileptic. Some patients are enabled by this symptom to tell with accuracy the nearness of the attack, and to avail themselves of this intimation to place themselves in a situation in which they will be less liable to sustain injury during the attack. Spiculæ of bones, tumours, and foreign bodies pressing upon and irritating some nerve, have been found to exist at the starting point of this singular sensation.* The primary irritation is, however, almost invariably seated elsewhere, and transferred sympathetically to the part in which the *aura* commences.

In many instances, the attack always occurs at night while the patient is sleeping. In this respect epilepsy differs conspicuously from *chorea*, the convulsive motions of which, however violent during the day, are almost always wholly suspended during sound sleep.

When the epileptic seizure occurs while the patient is sitting or standing, he suddenly falls down in a state of insensibility, and immediately becomes more or less violently convulsed. In some cases, the convulsive actions of the muscles, particularly those of the face, are frightfully violent; the whole frame is violently agitated; the eyes roll about; the lips and eyelids are convulsed; the tongue often spasmodically thrust from the mouth, which, with "the gnashing of the teeth, and the foaming at the mouth, give the countenance a horridly wild expression." Sometimes the teeth are firmly pressed together; at others, the jaws are widely and fixedly distended; the thumbs are almost invariably firmly pressed in upon the palms of the hands. The spasms are generally of the clonic kind; but in some instances, the muscles remain for a time rigidly contracted, the body being bent either backwards, forwards, or to one side, as in tetanus. Occasionally, the abdominal muscles are violently drawn in towards the spine. In many instances, there are strong erections of the penis, with spasmodic retraction of the testicles and occasional seminal discharge. (Richter.) The face is occasionally pale, but more commonly livid, with a turgid state of the veins of the head and neck. The heart palpitates rapidly; the pulse is usually contracted, irregular, and frequent;† and respiration oppressed, laborious, and in violent cases, sonorous. About the termination of the paroxysm a considerable quantity of frothy saliva usually flows from the mouth; and in some cases, the feces and urine

* Van Swieten's Commentaries, vol. iii. p. 419.—See also Medical Experiments and Observations by a Society, &c. at Edinburg, vol. iv. p. 334.

† Dr. Burnett relates a singular case of epilepsy in which the pulse became so slow at times, as to beat only fourteen strokes in a minute. —(Med. Chir. Transact. vol. xiii. part i. p. 202.) Morgagni relates two similar cases.

pass off involuntarily. Sooner or later these spasmodic symptoms abate—generally gradually, but sometimes abruptly. The respiration becomes freer; the pulse fuller and more regular; the countenance more composed; and the patient finally falls into a state of stupor or deep sleep, out of which he awakens with a feeling of languor and confusion and torpor of mind, which generally continues for ten or twelve hours. The countenance exhibits a vacant and stupid expression, and the eyes are dull, staring, and wandering. In violent attacks the mind remains obtuse and fatuous, and the temper irritable and morose, for several days after the paroxysm. During this somnolent state the patient usually perspires freely, particularly about the head, neck, and breast; and the perspiration has frequently a very peculiarly offensive smell.* The sweating has been known to be distinctly confined to one side of the body only.†

Epilepsy does not, however, always assume the violent grade just described. Sometimes the attack supervenes suddenly, and after a few moments of partial convulsions of the muscles of the face and neck quickly subsides, and restores the patient to consciousness. I once attended a girl affected with this disease, in so light a manner, that the convulsions seldom lasted longer than a few minutes.

In relation to the duration of the epileptic paroxysm, there exists great diversity. The convulsive stage generally continues from ten to fifteen minutes, sometimes for half an hour, and occasionally for several hours. The paroxysm is most apt to become protracted in children. In most instances one paroxysm only occurs at a time. Sometimes, however, they recur several times—the patient passing from one into another, with but a very short interval between them. In general the first attacks are shorter than those which occur after the disease has continued for some time. The contrary, however, generally takes place when the first attack is caused by some sudden and violent mental impression, as terror.

With regard to the interval between the epileptic seizures, also, there exists the greatest diversity. In some cases the paroxysm returns almost daily; in others at various intervals, from a few days to a whole year. Many instances observe a more or less perfect periodicity in the recurrence of the fits; whilst others are quite irregular in this respect. Richter observes, that cases arising from gastric or intestinal irritation—and from catamenial irregularities, are most apt to assume a periodical character.‡ Occasionally the paroxysms recur re-

* De Haen, Ratio Medend. tom. v. p. 123.
† Voigtel's Handbuch der Patholog. Anatom. B. i. p. 70.
‡ Specielle Therapie. Bd. vii. p. 570.

gularly at the periods of new or full moon. Nearly twenty years ago I treated a case successfully, in which for several years previously the paroxysms had returned regularly on the night of each full moon. Examples of this kind may, however, occur as mere coincidences, without any relation, as cause and effect, between the two phenomena.*

Epilepsy seldom proves fatal, except through the intervention of apoplexy. When it recurs very frequently, however, the mental powers gradually fail, until at last a total imbecility or idiotism is induced. The most complete state of idiotism I have ever seen was produced in less than two years in a fine, intelligent boy, by the ferocious attacks of this malady.

Post mortem appearances.—The morbid appearances discovered on dissecting subjects who die of epilepsy, are often similar to those which occur in apoplexy and palsy. No man has, perhaps, dissected so great a number of bodies that had died of epilepsy as M. Wentzel. Previous to the dissections of this indefatigable anatomist, it was generally thought that the *cerebrum* is the chief seat of the proximate cause of epilepsy. M. Wentzel, however, in a very great proportion of heads he examined found the cerebrum perfectly sound, whilst the *cerebellum* was uniformly in a diseased condition. The part of the cerebrum which he found most frequently affected was the pineal gland. The cerebellum was generally of a dusky red, approaching to a blackish colour; in some cases it exhibited a whitish or yellow hue, and in a few instances the posterior lobe was of a grey colour. This portion of the encephalon was sometimes very soft; more frequently it presented a preternaturally hard and compact structure. In ten out of twenty-one cases, a morbid, yellow, friable matter was found between the lobes of the cerebellum, which in some instances not only separated the lobes, but caused also the destruction of a portion of their substance. Notwithstanding these observations of Wentzel, dissections made by other pathologists render it certain that the substance of the cerebrum is often materially diseased in epilepsy. This indeed Wentzel does not deny, but his observations convinced him that this is much less frequently the case than we might be lead to believe from the observations previously published on this subject.† Both Greding,‡ and Roederer relate cases in which the cerebrum was disorganized to a greater or less extent. Some French pathologists have

* For a full discussion of this point, the reader may consult Mead. de Imperio Solis et Lunæ in Corpus Humanum; also, Balfour on Sol-lunar Influence. That the moon governs the epileptic paroxysm, appears indeed to be a very ancient opinion. Galen, Aretræus, and Alexander Trallianus entertained this opinion. (Cook on Nervous Diseases.)

† Cook on Nervous Diseases, &c. p. 342.

‡ Sammtliche Medic. Schriften. ii. Theil.

pointed out various morbid appearances of the mucous membrane of the intestinal canal as being intimately concerned in the causation of this disease.

Causes.—Observation has informed us that in some cases of this disease the original exciting cause is seated within the head, or acts directly on the cerebral mass; whilst in others the cause is located in some other part of the system, and affects the encephalon secondarily, through the medium of the nerves. It is evident, therefore, that we may with propriety divide this malady into two general varieties—namely, into *idiopathic* and *symptomatic.* Experience has shown that the latter is in general much more apt to yield to remediate treatment than the former.

In some individuals there appears to exist a constitutional predisposition to epilepsy; and it is, without doubt, in some instances of *hereditary* origin. Boerhaave mentions an instance in which all the children of an epileptic father died of this disease;* and Stahl has related a similar occurrence.† Tissot also mentions a remarkable instance of this kind. An epileptic man had eight sons and three grandsons, all of whom, he says, became affected with this disease. (Cook.)

Children, it has been observed, are much more liable to this disease than adults; but the age at which there appears to exist the strongest predisposition to epilepsy is the period of puberty. Some writers assert that females are more subject to this affection than males; others, however, contradict this assertion. Probably hysteria has been frequently mistaken for epilepsy, which may have given rise to this opinion. Those who have once had this disease, and have been freed from it by remediate treatment, generally retain a particular predisposition to its recurrence.

The *exciting* causes of epilepsy are exceedingly various. Of these causes some act immediately on the brain, and others make their impressions on distant parts, and affect the sensorium commune secondarily through the medium of the nerves. The most common of the former variety of causes are: injuries and malformation of the cranium; exostosis from the internal surface of the bones of the skull; spiculæ of bones driven in upon the brain; preternatural distention of the cerebral vessels; various organic affections of the brain, and effusions of different kinds within the cranium. (Cook.)

Sudden and violent mental emotions frequently produce this disease by a morbid excitement originating in the brain. Fear,

* Prælectiones in Prax. Med. tom. v. p. 30.

† De Hereditar. Dispos. ad Varios. Affectus. Halle, 1706, p. 48. Also in his Dissertatio de Epilepsia Hæreditaria Casum Exhibens, as quoted in Richter's Specielle. Therapie. Bd. vii. p. 594.

terror, grief, and other disagreeable sensorial and mental impressions have been known to give rise to epilepsy. I have met with three instances that were excited by terror. Locker states that six out of fourteen cases of this disease, which came under his care in the Hospital St. Mark at Vienna, were produced by terror. Many remarkable instances of epilepsy, excited by disagreeable and strong impressions on the senses, have been reported. Strong odours, sudden and vivid light, loud and peculiar sounds, and certain colours have produced this disease in weak and irritable habits. Weikart relates the case of an individual in whom the smell of red beets excited epileptic paroxysms.* The odour of the garden ranunculus has also given rise to the disease ;† and Cook quotes from Buchner an instance of an epileptic child in whom the sight of a vivid red colour seldom failed to excite a paroxysm of the disease. Cases of this kind are of course connected with idiosyncracies by which the influence of these exciting causes is peculiarly favoured.

This disease has frequently been excited by the sight of a person affected with the epileptic paroxysm. Dr. Rush mentions several instances of this kind. The principle of association exerts indeed a powerful influence over the actions of the animal economy; and in no disease has this been more strikingly exemplified than in the present one. The mere recollection, or sight of the causes or circumstances which attended the first attack of the disease, has re-excited the paroxysm.‡

Among the causes of this disease that act upon the brain through the general system, *gastric* or *intestinal* irritation is perhaps the most common. Epilepsy from this cause is most frequently met with in children. Worms, and indeed every other substance which is capable of producing an irritation in the nervous extremities of the mucous membrane of the alimentary canal, may give rise to this affection in weak and irritable subjects. A protracted case is related, which ceased entirely after the expulsion of a tape-worm.§ Leeches swallowed into the stomach have produced epilepsy. (Güdenklee.)

The suppression of habitual evacuations, whether sanguineous or serous, is another powerful exciting cause of epilepsy. Suppressed or morbidly postponed catamenial discharge soon after the age of puberty, is particularly apt to give rise to this affection in individuals otherwise predisposed to it.‖ The heal-

* Hufeland's Journal, Bd. xii. st. i. s. 174.

† Acta. Natur. Curios. Dec. iii. Ann. ix. x. Obs. 92, p. 170.

‡ Van Swieten. Commentar. Tom. iii. p. 414.

§ Mursinna's Journal. f. Chirurg. Arzneik. u. Geburthshuife. B. i. st. ii. p. 306. (Richter.)

‖ Falk, Dissert. de. Epilepsia s. Motib. Convuls. Virgin. See also the interesting observations of Prichard on this subject in his Treatise on Nervous Diseases.

ing up of old ulcers, setons, issues, &c. may give rise to epilepsy. Richter mentions the suppression of habitual sweating of the feet as a strong exciting cause of this and other convulsive affections. The repulsion or sudden drying up of chronic cutaneous eruptions, particularly the itch and *tinea capitis*, also may produce epilepsy; and in the exanthemata, either just before the eruption is about coming out, or from its sudden retrocession, this form of convulsive disease is by no means uncommon.

Excessive evacuations are also among the exciting causes of epilepsy; and this is particularly the case with inordinate seminal evacuations, either from excessive venery or masturbation.*

Various poisons, more especially of the narcotic kind, sometimes produce this disease. It is said that in Kamtschatka, epilepsy is frequently occasioned by the use of an indigenous species of toad-stool, which the inhabitants of that country are much in the habit of eating on account of its exhilarating effects.† The abuse of opium in children has a tendency to produce this malady; and among the mineral poisons, lead and arsenic are said to be most apt to excite it. Wendt mentions a case produced by lead, and Dr. Warren relates a fatal case produced by this poison. (Cook.) In the second volume of the Medico-Chirurg. Transactions, five cases are reported which arose from the reception of arsenic into the stomach.

The habitual intemperate use of alcoholic liquors is a very common cause of epilepsy. It is probable that epilepsy from this cause proceeds from the combined influence of hepatic disorder, and a constant preternatural determination of blood to the brain. Painful dentition, pregnancy, and parturition occasionally excite the disease. Tissot relates three cases which arose evidently from pregnancy. In one case, the patient was affected with epileptic paroxysms almost every week in three of her pregnancies until quickening commenced. Irritation from biliary concretions, as well as from urinary calculi, has sometimes give nrise to this affection. Dr. Cook refers to the works of Bertholini for examples of this kind.

Habitual tendency to congestion or plethora of the vessels of the brain is perhaps one of the most frequent exciting causes of the epileptic paroxysm. This may be the result either of a constitutional habit, or of the operation of some one of the foregoing exciting causes, particularly intestinal irritation, and suppressed sanguineous and serous discharges. Atmospheric influences also have been supposed capable of exciting this dis-

* Zimmerman on Experience. vol. iv. chap. 10.

† Langsdarf in d. Weterauschen Annalen. Bd. ii. hft. 2. (Richter, Spec. Ther.)

ease. Great heat or cold, and sudden vicissitudes of temperature are mentioned as *exciting* causes; but their influence in the production of this affection is perhaps rather *predisposing* than *exciting*.

On the subject of *the proximate cause* of epilepsy, a very great diversity of opinions has been expressed. Without entering into a detail of these opinions, all of which are hypothetical and many of them absurd, I shall content myself with a statement of those circumstances, which experience and observation appear to sanction in relation to the pathology of this affection.*

1. The immediate cause of the epileptic paroxysm, whatever its essential character may be, is always seated in the *brain*.

2. In the majority of fatal cases, organic and other obvious affections of the brain, particularly of the cerebellum, or of the meninges, are found on dissection, and which, we may infer, contributed to the excitation of the epileptic paroxysms.

3. The cerebral affection is in some instances primary, and the result of causes that act directly upon the brain. In others, probably in the majority of cases, it is secondary, depending on primary irritations located remotely from the brain.

4. Immediately before the accession of the epileptic attack, it would seem that vascular turgescence takes place in the encephalon; and the pressure thus created, in co-operation with the general predisposition to the disease and the organic cerebral affection, where such disorder exists, is probably the immediate exciting cause of the paroxysm.

It would be useless to enter into any discussion concerning the causes of the paroxysmal character of this affection, or of the occasional strict periodicity of its recurrence. The influence of habit has been adduced in explanation of these mysterious points of pathology. The term *habit*, however, in a physiological sense, can mean nothing else than a tendency to repeat an action, whether morbid or healthy, that has been produced by some exciting cause, without the presence or further co-operation of such cause. This, however, is merely expressing the general fact, and offers no explanation of it whatever.

Diagnosis.—The affection with which epilepsy is most liable to be confounded is hysteria, when this disease assumes the convulsive form. They may be distinguished from each other, however, by the following circumstances. In hysteric convulsions, the countenance is less livid and distorted than in epilepsy; and there is seldom any foaming at the mouth or profuse discharge of saliva, nor does it terminate in heavy sleep,

* Mr Mansford, in a work published on epilepsy a few years ago, gives it as his opinion, that the proximate cause of this disease consists in an accumulation of the electric matter in the brain, or what he considers the same thing, a superabundance of the nervous power in the sensorium commune.

or in a confused and torpid state of the mind, so general at the conclusion of the epileptic paroxysm. In hysteria too there are always some concomitant phenomena which indicate its character, such as the globus hystericus, involuntary laughing or weeping, and in many instances a continuation of some degree of consciousness, &c.

Prognosis.—Although the immediate danger of the epileptic paroxysm is not in general very great, yet in relation to its sanability, the prognosis is always highly unfavourable. Even where a cure or suspension of the disease has been effected, the liability to a relapse is always considerable. When epilepsy depends on organic disorder within the head, no remediate management can effect a cure. Epilepsy, however, unconnected with cerebral lesion, may sometimes be cured.* That variety of the disease which occurs in young females about the age of puberty, from menstrual irregularities, is not unfrequently curable, and indeed sometimes passes off spontaneously after the catamenia begin to flow regularly. The longer the disease has continued, or rather, the more frequently its attacks have been repeated, the greater will be the difficulty, in general, of effecting a cure; and when the mind has once become obviously affected or impaired by its attacks, all hopes of a cure may be abandoned. Experience too has shown that those epilepsies which commence soon after birth, or during early infancy, rarely, if ever, yield to remediate treatment. From the period of dentition to that of puberty, is the most favourable age for the cure of this affection. Hippocrates observes, that those who are attacked with epilepsy after the twenty-fifth year of age, will continue to have it as long as they live—an observation which, though very generally correct, is not confirmed by the experience of subsequent practitioners.† When the disease is the consequence of excessive venereal indulgence or masturbation, it

* Dr. Dewees, in his work on the "Practice of Physic," has inadvertently expressed contradictory sentiments in relation to the curableness of this disease. Under the head of treatment, he asks, "What plan of treatment has ever succeeded in curing epilepsy? Has epilepsy ever been cured?" Under the head of diagnosis, however, he says, "When the disease is symptomatic, it is occasionally curable," again, "those attacked between the fourth and tenth year may be cured by proper treatment." Most assuredly this latter sentiment accords with the experience of the ablest of the profession of all ages. However appalling and really intractable this disease may in general be, perfect cures are by no means so uncommon as the Doctor's interrogatories might lead one to suspect. I have known at least five distinctly marked cases cured under my own observation, two of which were of more than two years standing, and one above six years.

† He says, moreover, that when epilepsy commences before the fourteenth year, and is not connected with an hereditary predisposition to the disease, it frequently terminates spontaneously in after-life.—Aphor. xv. s. 7.—Aphor. vii. s. 5.—Aphor. xlv. s. 2.

may sometimes be removed, provided the mental powers have not as yet suffered considerably from its repeated attacks or from the influence of its cause. The epileptic paroxysms, which sometime occur in the exanthematous diseases, are seldom followed by serious consequences, and very rarely recur afterwards.

When the premonitory symptoms consist of some affections in the head, it may be regarded more unfavourable than if they manifest themselves in remote parts of the body, particularly in the extremities. Richter observes, that a long continuance of the sleep, and subsequent mental stupor and confusion after the subsidence of the paroxysm, is a very unfavourable sign.

Epilepsy from moral causes, particularly from violent anger or grief, is said to be very rarely cured. (Jahn. Klinik d. Chronisch. Krankh. Bd. i. p. 267.) It is also asserted, that those cases which come on at night during sleep, are in general more intractable than such as occur during the day and are preceded by premonitory symptoms. (Richter.) It has been affirmed by men of great experience, that epilepsy occasionally ceases spontaneously on a change of climate.*

Treatment.—There is perhaps no disease in which medical treatment is so frequently purely empirical as the one now under consideration. The causes are so multifarious, and generally so obscure, or so wholly beyond our cognizance, that we are seldom enabled to prescribe with any degree of reliance upon general and rational therapeutic principles. In this state of perplexity and uncertainty, we have often no other alternative left us, than to administer remedies, without being able to give any other reason for their use than that they have been occasionally successfully employed. True as this observation unquestionably is, we have nevertheless in some instances at least sufficient lights in the symptoms and causes to lead us to a consistent and rational plan of treatment. When called to a case of epilepsy, the first object of the practitioner should be to inquire into the nature of its exciting cause, its duration, the time and manner of the first attack, the general constitutional habit of the patient, his age, previous or concomitant diseases, his habitual temper and disposition of mind, his manner of living, his probable hereditary predisposition, in short, into every thing which can throw light on the particular character of the disease, and on the constitutional or acquired habits of the patient.

Authors assert, that when the premonitory sensation, termed *aura*, commences in one of the lower extremities, the epileptic paroxysm may sometimes be effectually prevented when it is approaching, by compressing the limb firmly with a tourniquet

* Lentin. in Hufeland's Journal. Bd. xiv. s. iii. p. 17.

or ligature above the part at which the aura may have reached. Dr. Cullen observes, "that a ligature upon the limb above the part from which the aura arises, should always in those cases be applied, both because the prevention of a fit breaks the habit of the disease, and because the frequent compression renders the nerves less fit to propagate the aura." Dr. Cook mentions an instance from the London Medical and Physical Journal, in which pressure made in this way prevented the paroxysm. Richter states, that when compression is thus made on a limb, above the ascending aura, the patient generally experiences great anxiety of feeling in the precordia, with extremely painful twitches in the compressed limb, accompanied sometimes with a sensation as if a heavy stone were thrown upon it. Brechstedt and Michaelis assert that the application of the tourniquet upon a leg has been known to put a speedy stop to the epileptic paroxysm after it had actually supervened.* In persons of robust and plethoric habits, prompt and efficient bleeding on the occurrence of the premonitory symptoms has been known to keep off the epileptic attack. Active purgatives have also been recommended with the view of obviating or palliating the impending paroxysm, where the premonitory stage is protracted; but their tendency in this respect deserves little or no attention. Richter and other of the earlier German writers speak favourably of the employment of *emetics* with this intention. They cannot, however, be used without considerable risk in cases attended with strong congestion in the vessels of the head. Richter states that they are only adapted to those cases which continue to recur from habit, after the original exciting cause has ceased to act. It even appears from the observations of this writer that a radical cure may be effected in this way. He states, that he cured a woman of this disease, by frequently suspending the paroxysms with the administration of emetics a short time before the expected occurrence of the epileptic attack.† It must be observed, however, that many highly respectable authorities might be adduced against the use of emetics, in this affection; and as a general rule they are indeed to be regarded as of very doubtful propriety. Jahn, in his excellent work on chronic diseases, says that a draught of cold water will occasionally do more towards keeping off an impending attack of epilepsy than any other means; and Dr. Busmann has published some cases tending to confirm this observation.‡ Some fifteen years ago, while practising in Lancaster, I knew an old epileptic patient who could generally keep off the paroxysm for some

* De Artuum Ligaturis ad Nonnullos Morbos Internos. Michaelis—in Medizin. Pract. Bibliothek. Bd. i. st. iii. p. 397—as quoted by Richter.

† Specielle. Therapie. Bd. vii. p. 630.

‡ Hufeland's Journal. Bd. x. st. ii. p. 133.

months by taking a large draught of cold water as soon as the premonitory symptoms came on. Without this precaution he seldom escaped having one or two fits a week.

In the epileptic paroxysm, our principal object should be to diminish the preternatural congestion of the cerebral vessels. The immediate danger of an epileptic fit arises chiefly from this condition of the cephalic circulation; for when death occurs during the paroxysm of this disease, it is almost invariably by apoplexy from vascular turgescence, or sanguineous extravasation. When the patient is plethoric, and the signs of inordinate sanguineous congestion in the head are considerable, it will be prudent to abstract blood, and to remove every thing which may compress the veins of the neck, or impede the free return of blood from the brain to the heart. It is very doubtful, however, whether any treatment, during the epileptic paroxysm, can materially mitigate its violence, or shorten its duration. It is almost exclusively with the view of protecting the brain, that remediate measures can be resorted to during the fit with a prospect of advantage.

The most important part of the treatment of epilepsy, however, is that which is proper during the intervals of the paroxysms, for the purpose of effecting a permanent removal of the disease.

I have already adverted to the importance of attending to the nature of the exciting cause in instituting a course of treatment for its radical cure. If our inquiries in this respect are successful, it will not be difficult to lay down an appropriate plan of treatment. Thus, if on a careful examination, it appears that the bowels are in a loaded and irritated state, and particularly if the signs of intestinal irritation existed, in a very obvious manner, previous to the occurrence, it would be exceedingly unwise to neglect the state of the bowels, and to resort at once to some one of the numberless remedies usually recommended in the disease. Epilepsy from this cause is principally confined to infancy and childhood. It is in this variety of the disease that emetics have been most frequently found useful. When symptoms of gastric irritation—such as nausea, flatulency, disturbed sleep, and other manifestations of indigestion, are present in children affected with this disease, a course of emetics has been used with decided success. (Richter.) In a child which had been affected with occasional epileptic paroxysms for upwards of eighteen months, I succeeded in removing the disease entirely by a course of emetics, (ipecac.) administered every third day.* Dr. Clark recom-

* This case came on after an attack of ague, which was cured by Fowler's solution.

mends a solution of sulphate of zinc, in an aqueous infusion of ipecacuanha, to be given every six, eight, or ten days.

Absorbents also have been recommended in the epilepsies of infants, attended with gastric disturbance; used in conjunction with mild tonics, and an occasional aperient, they are sometimes beneficial, particularly where there is much acidity in the primæ viæ.*

Richter observes, that we have reason to presume that the remote cause of the disease is seated in the stomach when vomiting occurs at the close of the paroxysm. He mentions also a peculiar tremulous motion of the under lip as a sign of the existence of gastric irritation, from vitiated secretions or other offensive matters. Van Swieten relates a case of epilepsy, the fits of which were always preceded by a remarkable tremour of the under lip. The case was treated by emetics and purgatives, and thereby permanently removed.† If symptoms of intestinal worms are present, anthelmenitic remedies are decidedly indicated. Small and repeated doses of calomel, with an occasional dose of castor oil, with a small portion of spirits of turpentine, or infusion of spigelia, followed with a full dose of calomel and jalap, will sometimes answer in such cases.

In verminous epilepsy, full doses of powdered valerian with the elutriated oxyd of tin, has been successfully used. From one to two drachms of the former, with thirty to forty grains of the latter, may be taken three times daily.

Should it appear that the disease arose in the first instance from sudden suppression of the perspiration, a course of diaphoretics, and whatever else may have a tendency to keep up a regular action of the cutaneous exhalents, should be resorted to. Frictions with dry flannel; the occasional use of the warm bath, rendered more stimulating by the addition of common salt; flannel worn next the skin; active exercise when the weather is dry; the internal use of diaphoretic remedies—such as the pulvis antimonialis; camphor in union with tartar emetic; the tincture of guaiacum; and sulphur, are appropriate and occasionally beneficial remedies in such cases.

When epilepsy arises from the repulsion of cutaneous eruptions or the drying up of old ulcers, the manifest indication is to restore these affections; or, if this cannot be done, to establish others artificially in their stead. For this purpose we

* The famous powder of margrave, which is still a good deal used by some of the German practitioners in infantile epilepsy, owes whatever powers it possesses to its absorbent, tonic, and aperient virtues. It is composed of one ounce of powdered mistletoe, the same quantity of sugar, and half an ounce of the carbonate of magnesia. The dose is a teaspoonful two or three times daily for a child under five years old.—*Richter's Spec. Therap.* Bd. vii. p. 645.

† Comment. T. iii. p. 439.

may employ issues, setons, blisters, and particularly frictions with tartar emetic ointment, together with diaphoretics, warm bathing, and stimulating frictions. Richter says, that in such cases, vomits are occasionally very useful; he also speaks favourably of the use of musk and camphor in epilepsy arising from causes of this kind. Prichard recommends mercury, given to the extent of producing ptyalism, in this variety of the disease. One of his patients was perfectly cured by a copious salivation.

In those cases which occur in young females in consequence of an unsuccessful or imperfect menstrual effort, the indications are, to remove the preternatural determination to the head, and to establish or restore the natural determination to the uterine system, and thereby the regular performance of the menstrual function. This variety of the disease occurs chiefly in young females of sanguine temperament; and bleeding, therefore, can seldom be dispensed with. Indeed, in all cases of this kind I have met with, bleeding was decidedly indicated by the condition of the pulse, the occasionally flushed countenance, and sense of fulness in the head. Dr. Prichard, speaking of this variety of the disease, which he calls *uterine*, observes—"The immediate effects of blood-letting are generally relief of the pain and oppression of the head, and a subsidence of the carotid and temporal pulsations. Sometimes the use of the lancet is speedily followed by a restoration of the catamenia." He advises that the blood be taken while the patient is sitting up, and that it be suffered to flow until syncope begins to come on. In addition to bleeding in cases of this kind, the warm semicupium is a valuable remedy.* We may also employ frictions about the loins, back, and pubic region, and stimulating enemata, with advantage. Prichard recommends glysters composed of spirits of turpentine and castor oil in such cases. An ounce of each should be occasionally thrown into the rectum. After the plethoric or phlogistic state of the system has been reduced by the foregeing measures, it will be proper to resort to emmenagogue remedies, if the menstrual evacuation has not already been restored. The following pill may be employed for this purpose.† According to the experience of Dr. Prichard, the best emmenagogue we possess in the treatment of *uterine* epilepsy is the *oil of turpentine.* It should be given in doses of from half a drachm to two drachms once or twice daily. I used the turpentine in a case, about eighteen

* The bath, says Prichard, should be about the temperature of 96° or 98° of Fahrenheit's scale.—*Treatise on Diseases of the Nervous System.* Lond. 1822.

† R. Extract. sabinæ ʒii.
G. aloes lacc. ℈i.
Sulphat. ferri. gr. x.
M. Fiant. pil. No. 40. Take one every six hours.

months ago, with complete success. Setons in the nape of the neck, or on the arms, or on the sacrum, have also been recommended. This variety of epilepsy is almost invariably suspended by pregnancy.

In epilepsy from onanism, besides the proper moral influences, Richter strongly recommends the use of camphor in regular and full doses. That this article possesses the power of lessening the venereal propensity I am fully persuaded, and its general influence, independent of this particular effect, renders it a suitable remedy in cases of this kind. Patients affected with epilepsy from this cause, should sleep on a hard mattress, rise early, take exercise in the open air, and use a mild and unirritating diet. The tepid shower-bath, and laborious occupations will sometimes assist materially in removing the habit upon which the disease depends, and without the discontinuance of this habit, nothing useful can be expected from remediate treatment.

Epilepsy from local injuries of the head has been cured by surgical operations. Boerhaave, Theiner, Stalpart, and Van der Weil, relate instances in which trepanning succeeded in removing the disease. *Tissot* also mentions several instances of this kind. Dr. Massie gives an account of a case of epilepsy which was produced by a blow on the head, and consequent depression of a portion of the cranial bones. After the disease had continued about four years, the patient was trepanned, and a spicula of the bone removed, after which the paroxysms returned no more.*

Instances have also occurred in which epilepsy was cured by surgical operations on other parts of the body than the head. Portal relates a case, where the paroxysms always commenced with violent pain in the index finger. This patient was cured by dividing the radial nerves.† The disease has sometimes terminated spontaneously after the removal of spiculæ of bones, balls, tumours, or other foreign bodies pressing upon particular nerves.‡ Dr. Dudly of Lexington succeeded in curing a case of epilepsy by removing a spicula of bone which had penetrated the substance of the brain to a considerable distance; and Dr. Rogers of New-York succeeded in a case by a similar operation.

Where we can ascertain the remote cause of the disease, we should always found the plan of treatment on the general indications which such a knowledge is capable of affording. In the majority of instances, however, we are wholly left in the

* Philadelphia Med. and Phys. Jour. 1809. No. 35.

† Cours d'Anatomie Medicale. T. iv. p. 247. 272.

‡ Memoires sur la Nature et le Traitement de Plusieurs Maladies. Par. Ant. Portal. vol. xi. p. 229. (Richter.)

dark with regard to this point, and very frequently indeed all our efforts to cure the disease under the guidance of what we may deem the most unequivocal curative indications are unsuccessful. In this case we are obliged, if we wish to pursue our endeavours to effect a cure, to resort to some one, or many, by turns, of that long list of remedies which, according to the reports of eminent practitioners or our own experience, have occasionally succeeded in removing the disease, without our being able to give any other satisfactory reason why they are resorted to. The following are the most celebrated of these anti-epileptic remedies.

Valerian.—This is one of the most ancient remedies employed in this disease. Aretæus and Dioscorides recommend it as a valuable medicine in this affection; and it is favourably mentioned by many of the most celebrated of modern writers.* It should be given in as large doses as the stomach will bear. From a drachm to two drachms may be taken three times daily. This article is said to be most apt to do good in epilepsies from verminous irritation, suppressed catamenia, terror, and repelled cutaneous eruptions. Quarin used it with success in epilepsy of infants. (Richter.)† Biett generally employs the oil of valerian in this affection in doses of from 40 to 50 drops three times daily. (Casper. Character. d. Fanz. Med. p. 192.)

The mistletoe also is a very old remedy in epilepsy; and if we are to place any reliance on the testimony of Boerhaave, De Haen, Van Swieten, Hufeland, Stark, and Richter, we cannot doubt of having proved effectual in removing this aeffction.

* Hoffman, De Haen, Burserius, Haller, Murray, Selle, Tissot, Tillenius, Vogel, Hanneman, Horn, Quarin, and others recommend it as a valuable remedy in epilepsy. On the other hand, Cullen, Home, Heberden, and Woodville regard it of but little value in this disease.

† The famous *anti-epileptic powder of Ragolai* contains a large proportion of valerian. According to Knopf's analysis this nostrum is composed of one drachm of valerian, one scruple of orange leaves, two grains of muriate of ammonia, and a few drops of cajeput oil. Jahn thinks that it contains a portion of the powdered root of the *convallaria majalis;* and some assert that it consists of a mixture of valerian, agaric, and an ethereal oil. This remedy, according to the testimony of Richter and others, has cured obstinate and even inveterate cases of epilepsy. Richter succeeded in curing a case of four years standing by a powder composed of one drachm of valerian, with three drops of cajeput oil taken four times daily for six weeks. (Therap. Speciel. vol. vii. p. 672.) In this city the following composition has been used with complete success in some instances, and frequently with the effect of postponing the paroxysm for many months.

R. Pulv. zingeberis.
—— fol. salviæ.
—— sem sinapi āā ℥i. Dose. A tea-spoonful three times daily.

I have myself employed this powder with advantage in a few cases, though never with complete success.

Cullen admits that in large doses it may perhaps be useful; but he thinks it probable, and with justice, that the reputation it once had arose in a great measure from its having been an object of superstition, and thus calling in the powerful aid of the imagination to whatever powers it may really possess of itself. Frazer, in a small work published on the powers of this article, asserts that he cured nine cases out of eleven with this medicine. He gave it in powder, in doses of from two scruples to two drachms, twice daily in a draught of camphorated emulsion. (Cook.) We have moreover the testimony of Fothergill and Dr. Willan in favour of this article as a remedy in epilepsy. Of late years, however, it has fallen into total neglect. I knew an empiric who succeeded in curing several old cases with this article.

*The animal oil of Dipple** also was formerly a good deal employed in the treatment of this disease; and we have the testimony of Hoffman, Cullen, Bang,† Kortrum, Quarin, Werlhof, Thouvenel, Van Hoven, and others in its favour. It is given in doses of from 20 to 50 drops three times daily. It is said by Richter to be most useful in epilepsies originating from metastastic gout, rheumatism, and from repelled cutaneous eruptions.

The oil of turpentine has at present no inconsiderable reputation as a remedy in this disease. I have already mentioned its usefulness in epilepsy from menstrual disorder, on the authority of Dr. Prichard. It has also been successfully used in other varieties, particularly in cases depending on intestinal irritation from worms and other offensive matters. Dr. Latham cured several cases of epilepsy with this remedy. Dr. Young has given an account of two cases which yielded under the use of this remedy;‡ and Dr. E. Percival relates three instances of its successful employment.§ Dr W. Money also testifies to the usefulness of this article in epilepsy; and Dr. Prichard assures us that of all other remedies which he has tried in this disease, he has found none so frequently useful as the oil of turpentine. (loc. cit.) Biett is said to employ this oil frequently for the cure of epilepsy in the Hospital St. Louis. This article should be given in doses varying from a half to two drachms three times daily. Fresh milk is perhaps the best vehicle for administering it.

The root of the pæony was anciently highly esteemed for its powers in this disease. It was a favourite remedy with Stark;

* Dippel. Disquisitio de Vitæ Animalis Morbis. p. 89.
† Acta Societ. Med. Hav. vol. i. p. 500.
‡ Transactions of the College of Physicians. Lond. vol. v.
§ Edinb. Med. and Surg. Jour. vol ix. p. 271.

and it is particularly recommended by Hufeland, Jahn,* and Thom. Hufeland says, it is especially useful in the epileptic affections of children. The powder is given in doses of half a drachm three times daily, or an infusion of one ounce of the root to eight ounces of water, given in table-spoonful doses every two hours.

Agaricus muscarius was first employed in this disease by Bernhard. Wistling and Gruner afterwards published statements illustrative of its powers in this affection. (Richter.) It is said to be most useful in cases originating from repelled cutaneous eruptions. The dose is from a scruple to a drachm three times daily.

Artemisia vulgaris, or mugwort, has been lately much commended for its virtues in this disease by several eminent German practitioners. About eight years ago, Dr. Burdach, an eminent physician and writer, published an account of the successful treatment of several cases of epilepsy by this root; and in a recent number of Hufeland's Journal, he has adduced further evidence of its usefulness in this disease. It is a remarkable circumstance, he says, that in nearly every case in which this article proved successful, an evident amendment of the disease took place from the first dose. It appears further, from the experience of this physician, that in cases of epilepsy occuring in *male* subjects about the age of puberty, this remedy very seldom does any good. In young females about the same age, "its beneficial effects are often prompt and decisive. He occasionally found it very speedily successful in apparently very obstinate cases, while in others, seemingly quite similar, it was wholly inefficient. An interesting instance of the successful employment of this remedy, is related by Dr. Wagner, in Hufeland's Journal, (vol. for 1824,) and in the 12th Annual Report of the Berlin Polyclynic Institute, there is another case related which yielded under the use of the artemisia. It is usually given according to the following formula.† This is not a new remedy. Etmuller mentions its use in epilepsy; and Zwinger, speaking of this plant says, *mire in epilepsia valet*. The internal ligneous part of the root is inert. The cortical portion alone is said to possess medicinal powers. The artemisia is indigenous to this country, particularly to Pennsylvania.‡

* Klinik d. Chron. Krankh. Bd. i. p. 282.

† R. Pulv. rad. artem. vulg. ℥ss.
Pulv. sacch. albi. ℥i.
M. Of this, about a tea-spoonful is to be taken four times daily; the dose being gradually increased.

‡ Besides the foregoing remedies, a great many others of a similar character have been recommended in this affection. *Veratrum Album*, (Stark, Schulze, Greeding.) The roots of the *white lily*, (Hufeland's

Of the narcotics, belladonna,* opium,† camphor,‡ and stramonium,§ have been most recommended in this affection. Some of the antispasmodics also have been employed with benefit in epilepsy. Among these, musk, castor, and assafœtida, are generally supposed to be the most useful. Very commonally, however, no advantage whatever is to be derived from remedies of this kind; and they are often manifestly injurious, by their tendency of increasing preternatural determination to the head.

Of late years, *phosphorus* has been strongly recommended by some as a remedy in this affection. I gave it in one case about two years ago, and although it did not perform a cure, it suspended the paroxysm above three months beyond its usual period of recurrence. Four grains may be dissolved in half an ounce of sulphuric æther. Of this, from eight to ten drops should be given three times daily in some mucilaginous fluid.‖ This article cannot, however, be employed with propriety, in cases attended with general plethora, or habitual congestions

Jour. B. xxxi. p. 30,) *Phelandrium aquaticum;* faba St. Ignatii; the fresh *juice of white onions*, (Hufeland's Annalem;) *Radix meu* (Jahn,) the *juice of unripe grapes*, (L. Frank, Loebstein—Loebel;) *sedum acre* (Zachorn, Hufeland's Jour. Bd. xl. p. 19;) *folia aurantiorum*, (Van Swieten, De Haen, Stoerk, Werlhof, Stark, Hufeland, Thilenius.) The *carbonate of potash* in large doses, is recommended in recent cases. (Hufeland's Jour. Bd. viii. p. 170.)

* Stoll, (Ratio Medend. vol. iii. p. 406,) Hufeland, (Journal d. Prack. Heilk. Bd. ix.) Greeding, (Vermischte Shriften,) and Jahn, (Klink d. Chron. Krank. B. i. p. 282,) speak favourably of this narcotic as a remedy in epilepsy. Richter says, it should never be given to children—or in cases attended with habitual congestion of the cerebral vessels.

† Tralles, (Ussu Opii Salubris et Noxius, &c. p. 16.) Fothergill, (Med. Observ. and Inquir. vol. vi. p. 80,) asserts that opium may be very beneficially used in cases attended with a weak, irritable, and nervous habit of body; and in cases that arise from violent pain or mental excitement. Dr. Huxy relates an instance of the successful employment of opium in epilepsy; and Dr. Darwin tells us that in two cases in which the fit always occurred at night during sleep—a grain of opium given at bed time removed the disease completely.

‡ Richter says, that camphor is sometimes particularly useful in cases that depend on onanism, or the repulsion of chronic cutaneous eruptions. (Loc. cit. B. vii. p. 682.)

§ This article is much praised as a remedy for epilepsy by some of the Swedish writers. Ohdelius speaks favourably of it; and Greeding cured a few cases with its use. Hufeland asserts, that he has used the tinct. sem. stramon. with decided benefit in this disease. (Journal, Bd. ix. st. 3.

‖ In Horn's Archives of Medicine (Bd. x. hft. ii. p. 270,) the following formula is given for the administration of this article.

R. Ol. tereb. ʒss. Ol. olivar ʒiii. Phosphor. gr. ii.; put them into a half ounce phial, and digest it in warm water until the phosphorus is dissolved; then add mucilage of gum arabic ʒiv. Syrup of cinnamon ʒss. M. Dose, a desert-spoonful every 3 or 4 hours.—(Richter, l. c.)

in the cephalic vessels. Where symptomatic epilepsy is connected with torpor of the vascular and nervous systems, or general debility and relaxation, advantage may be expected from it. Lobestein-Loebel, Van Hoven, and Horn, relate instances of its successful employment.

The oxyde of zinc is generally regarded as one of our most efficient remedies in epilepsy; and from the testimony extant in relation to its powers, as well as from facts which have come under my own notice, I am inclined to regard it as a medicine of considerable value in this affection.* This article is generally given in much too small doses to do any good in epilepsy. It may be commenced with in doses of three grains thrice daily, and gradually increased to the amount of forty or fifty grains a day. Dr. Gutherie cured a case in which the paroxysms returned three or four times daily, with this article, given to the extent of eight grains on the first day, and gradually increased to forty grains in twenty-four hours. (Duncan's Annals of Med. v. iv. p. 473.) It is generally given by itself; but it would seem that its powers may at times be enhanced by combining it with bitter and laxative remedies. Lentin (Hufeland's Jour. Bd. xiv. st. iii. p. 13,) cured an inveterate case with a powder composed of fifteen grains of magnesia, from two to eight grains of oxyde of zinc, two grains of the extract of quassia, and two drops of cajeput oil, twice daily. Stroubel (Hufeland's Jour. Bd. 52. st. i. p. 40,) used this metallic preparation, in union with mistletoe, with complete success, in a case attended with much nervous irritability.

The sulphate of zinc has also been occasionally used with success in this affection. It is favourably mentioned, in this respect, by Lettsom, Weikart, Cullen, Ideler, (Hufeland's Jour. Bd. iv. p. 114.)

Cuprum ammoniacum. This was the favourite remedy in epilepsy with Cullen. I have given it in ten or twelve cases, one of which only derived any decided benefit from its use. This article is indeed a very old remedy in this affection. Aræteus mentions it as a valuable antiepileptic. Richter observes, that the *cuprum ammoniacum* is only calculated to do good in cases attended with a torpid, inirritable, and

* This remedy has been used with success by *Bell and Percival*, (Edinb. Med. Comment. v. i. p. 229, and v. ii. p. 316;) *Beireis, Home*, (Clinical Experiments, p. 223;) *Ranoe*, (Acta. Societ. Med. Hafn. vol. i. p. 451, 457;) *Metzcher*, (Adversar. Med. p. ii. p. 98;) *Osiander*, (Denkwuirdigk. Bd. ii. p. 188;) *Hirschel, Richter*, (Med. Chir. Nebenst. pp. 161, 190;) *Shearman*, (Lond. Med. and Phys Repos. Sept. 1822;) *P. Frank*, (Prax. Med. Univ. Praec. P. II. tom. i. p. 409;) *Dr. Haygarth, Dr. White*, (Cook. on Nervous Diseases, p. 398;) *Van Hoven*, (Handbuch, Bd. ii. p. 131.)

phlegmatic constitution, and a healthy state of the digestive functions, and when it is continued from habit.* According to Stark, it is especially beneficial in cases depending on verminous irritation, or on repelled herpetic eruptions. Haase, an eminent German writer, asserts that it is much better adapted to the cure of epilepsy in adults than in children: and he agrees with Richter, in regarding inirritable and phlegmatic subjects as most apt to derive benefit from its use. The dose at first is from a quarter to half a grain, and gradually increased to one or one and a half grain three times daily, or until it creates considerable nausea and gastric disturbance. Dippel refers to a preparation of copper, consisting of a union of this metal with potash, ammonia, and oil of turpentine, which, he avers, has been used with the most decided benefit in epilepsy. (Richter, Specielle Therapie. Bd. vii. p. 701.) The mode of preparing this mixture is given by Durr (in Hufeland's Journal, Bd. xxviii. st. iv. p. 117.) Richter says, that when given in union with valerian, its effects are generally more beneficial.

The *nitrate of silver* possesses at present more reputation as a remedy in epilepsy than perhaps any other remediate article. It would be an easy matter to collect a very considerable number of instances of its successful employment in this disease.† From the various and highly respectable testimonies we have in relation to its powers, it is, without doubt, entitled to much attention as a remedy in this affection. In order to obtain its beneficial effects as an antiepileptic, this preparation should be given in as large doses as the stomach

* Numerous authorities may be quoted in favour of the antiepileptic powers of this preparation. The most celebrated are, *Burserius*, (Instit. Pract. vol. iii. p. 11. § 289;) *Lobestein-Loebel*, (Wesen, u Heilung d. Epilepsie, p. 234;) *Duncan*, *Harles*, (Jour d. Auslaend Med. Liter. Bd. iv. st. 2;) *Bland*, (Medical Commentaries, vol vii. p. 300;) *Greding*, (Vermischte Schriften, Bd. i. p. 103;) *Michaelis*, (Med. Pr. Bibl. 1785. B i. st. 3;) *Stark*, (Handbuch Z. Erkennt. &c ;) *J. Frank*, (Praxeos Med. Univ. Praec. P. II. vol. i. p. 412.) *Haase*, (Chron. Krankh. Bd. ii. s. 103;) *Thilenius*, (Med. u. Chir. Bemerk. Bd. i. p. 103;) *Bally*, (Duncan. Medical Annals, vol. i. Lust. p. 377.)

† It has been used with success, in well marked and often long standing cases of epilepsy, by Sims, (Mem. of the Med. Societ. of Lond. vol. vi. p. 397;) Cappe, (Duncan's Annals, for 1798, p. 56;) Bostock, Hull, Heberden, (Commentaries;) Sauchier, (Annal. de la Societ. de Méd. de Montpell. T. vii. pp. 369, 384;) Valentin, (Ibid, T. viii p. 182;) Heim, Nord, (Med. Nationalzeit. 1798;) Born, (Hufeland's Journal, Bd. xlv. st. i p. 93;) Shaeffer, (Ibid, Bd. xlviii. p. 43;) Pitschaft, (Ibid, Bd. li. st. 3. p. 54;) Lobestein-Loebel, (Wesen u. Heil. d. Epilepsie, p. 243;) Portal, Fouquier, (Dict. des Sciences Med. T. xxxvii. p. 120;) Harrison, Baillie, Roget, Johnson, (Cook on Nervous Diseases, p. 394;) Barladini, (Omodei. Annal. di. Medic. 1826. p. 41;) Jahn, (Arzneinuttell, Bd. i. and Klinik d. Chron. Krankh. B. i. p. 283;) Kruiger, (Archiv. f. Med. Erfahr. v. Horn, Maertz, April, 1823;) Toel, (Ibid, 1824, Nov. and Decemb.;) Biett, (Casper. Charakt. d. Franzoesish. Med. p. 191.)

will bear. Dr. Powel observes, that the nitrate of silver may be taken into the stomach in much larger quantities without inconvenience in the form of pills than in solution. We may commence with one grain, and gradually increase the dose to three or four grains or more three times daily. Richter states, that this article seldom does any good unless the digestive organs are in a healthy and vigorous condition; and Dr. Harrison considers it particularly adapted to those cases which are connected with a morbid irritability of the nervous system. I have given it in a number of cases—in one case only, however, did it prove permanently successful. Kruiger employed this article with success according to the following formula.* The nitrate of silver will sometimes manifest no beneficial effects until its use has been continued for many months. Toel (Horn's Archives, 1824,) relates a case in which the paroxysms recurred regularly every month at night during sleep, which yielded at last to this remedy after it had been regularly taken for more than a year and a half. It is a common practice to discontinue the use of this and other similar remedies, if no perceptible advantage is derived from it in the course of six or eight weeks. This, I am persuaded, is not unfrequently the source of defeat in our attempts to subdue this complaint. I once succeeded in curing a case of seven years' continuance, by persisting with the same remedy for nine months.

Tin.—This article has recently been strongly recommended in the cure of epilepsy. Dr. Shearman states, that in his hands the elutriated oxyd of tin has more frequently succeeded in curing this affection than any other remedy he has ever employed. He gave it in doses of from two scruples to one drachm, night and morning, for about four days. At the end of that time he ordered a purgative, and again gave this preparation, or not, according to its effects on the system.† The filings of tin, given in large doses, have been used with success in epilepsy from verminous irritation by Richter, (*Asklepeion*, 1811. st. 67. s. 1060,) and Monro, (*A Treatise on Med. and Pharm. Chem.* vol. i. p. 289.) From the acknowledged anthelmintic properties of this article, it is manifestly peculiarly adapted to cases which depend on irritation from worms.

Lead.—The acetate of lead has been employed with entire success in a few instances of this disease. About sixteen years

* R. Nitrat. argenti. gr. vi.
G. opii gr. x.
Extract. gentian ℥i.
Extract. aloes ℈i.
M. Divide into two grain pills. Take one three times daily, increasing the number from time to time.

† London Medical Repository.

ago, I succeeded in curing a case with this remedy which had continued for upwards of seven years. The patient was a young man about 22 years old; and the disease was excited, in the first instance, by violent terror. The paroxysms returned regularly at each period of full moon. I prescribed three grains of sugar of lead mornings and evenings, commencing three days before the time of full moon, and continuing two or three days after this period. He took the medicine in this manner for nine successive lunar periods; but the disease did not return after the fifth period from the time the treatment was commenced.* Dr. Rush gave this remedy in two grain doses with complete success in a case of this disease;† and Drs. Spence and Agnew employed it, in some instances, with decided benefit. Saxdorph also gave it with marked advantage.‡ Quarin (Animadv. Pract.) and Portal condemn its use in epilepsy, as being inefficacious in small doses and dangerous in large ones.

Besides the foregoing remedies, many others have been used with advantage. Dr. Johnson speaks favourably of the internal use of cantharides; Dr. Kirkhoff has used the prussiate of iron with success; and Underwood has derived advantage from the use of savin.

Mercury, with a view to its salivant effects, was formerly much recommended. Burserius speaks highly of the powers of cinnabar in this affection. Mercurials, particularly mercurial frictions, were used with success by Bang, Willis, Ettmuiller, J. Frank, Tissot, Locher, and others.

Richter states, that the sulphuric acid sometimes produced the happiest effects in epilepsy. Advantage, however, is to be expected from its use only in cases attended with a general nervous irritability, and erethism of the vascular system. In such cases, from two to four drachms of the acid should be taken during the day. Zimmerman, Tissot, and Hildebrand, (Hufeland's Jour. Bd. ix. p. 84,) commend the antiepileptic powers of this acid.

Various external remediate applications also have been recommended, and occasionally used with advantage in this affection.

Statements have been published which go to show that *galvanism* may occasionally be employed with benefit. It is said to be most efficacious in this disease when its influence is applied some time before the accession of the expected paroxysm; and (when the case is preceded by the *aura*,) if the positive current of the galvanic fluid is passed through the part where

* New-York Medical Repository, vol. ii. No. I. 1815.
† New-York Med. Repos. vol. ii. No. I. new series, 1813.
‡ Osann. Dissertatio de Saturni Usu Medico, &c. 1809.

the *aura* commences.* According to the experience of Mansford, little or no advantage is gained from galvanism in epilepsy, unless it be applied steadily and constantly, and only with a weak power. He thinks that the negative point should be as near the brain as possible, and the positive one in some distant part of the body.†

Electricity has also been recommended for the cure of epilepsy. Richter states, that this agent has been employed in several obstinate cases with great advantage. Both galvanism and electricity, however, may, and have done unequivocal harm, particularly when applied with much force. It is only in cases attended with a torpid and inirritable state of the nervous system, that these powers appear to be applicable with a prospect of benefit.‡

Setons and issues were at one time much used in epilepsy. Hippocrates cured a case by an issue on the crown of the head, (De Morb. Sacro. § vii.;) and Tulpius relates a case cured in the same way. Mead used blisters on the back of the neck with success, (De Imperio Solis et Lunæ. cap. xi.) Fabricius cured an obstinate case with a seton in the nape of the neck, (Observ. et Epistol. Franc. cent. i. ob. 41.) The *actual cautery* has also been successfully applied in this disease. Van Swieten, Heister, Willis, De Haen, Larrey, and others, have related cases cured by this severe application. This remedy is mentioned by the ancients as a cure for epilepsy, particularly by Cælius Aurilianus. (Richter.)

Larrey has published an account of some cases of epilepsy, in which local bleeding from the vessels of the head, and the subsequent application of moxas, blisters, and other counter-irritants, proved completely effectual. (Revue Medicale.)

Of late years a good deal has been said in favour of pustulation with tartar emetic ointment, as a remedy in this affection. Mr. John Creighton has related six cases treated by frictions with this ointment along the course of the spine with very obvious benefit, though not with entire success in any one.§ More recently, Dr. Carter has given an account of five cases of epilepsy which go to show the usefulness of this application.‖

Music has been employed to overcome this distressing malady. Quarin states, by means of this delicious power he suc-

* Walther. Uber d. Therapeutisch Indic. d. Galvanism. Richter, Specielle. Therapie. Bd. vii. p. 716.

† Galvanism is favourably mentioned as a remedy by *Martens*, (Answeis. Zur Therapeut. Anwend. d. Galvanismus, p. 333 ;) *Whitlam*, (Med. and Phys. Jour. vol. xiv.) *Burdach.*

‡ Electricity is particularly recommended in this disease by Albans, Stoll, Kuihn, Spengler, Wilhelm, and others.

§ Dublin Transactions, vol. iv.

‖ Med. Chir. Rev. vol. ix. July, 1826.

ceeded in gradually weakening and finally subduing the epileptic paroxysms in one case.

Whatever mode of treatment or remedies be employed, particular attention should always be paid to proper regulations in relation to the diet, exercise, and the action of the bowels.

CHAPTER VI.

CATALEPSY.

We find this very remarkable and rare disease described in the books under a variety of names—such as *stupor vigilans*, *congelatio*, *extasis*, *catoche* or *catochus*, *lethargus*, *carus catalepsia*, &c.

Catalepsy consists in a temporary suspension of consciousness, sensorial power, and volition—the body remaining in the precise position in which it was when the attack came on, without coma, muscular rigidity, or spasm; the respiration and circulation continuing.

The attack generally comes on without any warning of its approach. In some instances, however, symptoms, premonitory of the cataleptic seizure occur, such as vertigo, cephalalgia, flushed face, a certain inactivity of mind and body, pain in the præcordium, a feeling of heaviness or tremor in the extremities, forgetfulness, flatulent pains in the bowels, yawning, sensorial obtuseness, depressed spirits; and in some instances a sensation similar to the *aura epileptica*.

When the attack occurs, every part of the body remains in precisely the same position in which it was at the moment of the seizure. If the paroxysm comes on while the person is in the act of doing any thing, as, for instance, drinking, the hand will be suddenly arrested with, perhaps, the glass near the lips and the mouth open. Even the expression of the countenance continues fixed during the cataleptic state, as at the moment of the attack.* The eyes are generally open, fixed, and slightly turned up. Sometimes they are spasmodically closed. One of the most remarkable circumstances of this affection is the wax-like flexibility (*flexibilitas cerea*) of all the members of the body, with sufficient tonic muscular action to cause an extremity, or the whole of the body, to remain in the exact position in which it is put by another person. Thus, if during the cataleptic state, the arm be raised up, or in any way extended or flexed, it will remain so until the paroxysm

* Richter's Specielle Therap. Bd. viii. p. 471.

is over. To this, however, the eye-lids sometimes form an exception. When they are closed, they will not remain open when separated with the fingers; and when open, they immediately separate again, if forcibly closed, as soon as the force is removed. Van Swieten mentions an instance of the former,* and Heberden one of the latter.† In complete catalepsy, all the sensorial functions are entirely suspended, and the patient on recovering, remembers nothing either of his own internal sensations, or of what is done about him during the paroxysm. The period occupied by the attack is a perfect blank in the patient's existence; and if the paroxysm comes on while he is conversing, or in the performance of any other continuous act, he will resume the thread of the conversation, or even finish the half-pronounced word, or continue his acts, as soon as the paroxysm is over, as if no interruption had taken place. Although voluntary motion is almost universally suspended during the cataleptic attack, cases have occurred in which locomotion continued without, however, the least consciousness in the patient of its performance. Dr. Stearns‡ relates a case in which if the paroxysm came on while the patient was walking, the same pace was unconsciously continued. Dr. Good also relates a similar instance in which the involuntary walking continued during the attack.§ Fernelius states, that he saw a cataleptic patient, who, when pushed forwards, walked with a regular and firm step.‖

In cases less perfect, some degree of sensorial power remains, and the patient retains an indistinct recollection of what occurred during the paroxysm, on emerging out of it. But even in cases of this kind, all power of voluntary motion, or of manifesting, in any manner, a consciousness of their situation, or a desire for any thing, is wholly suspended. A case is mentioned by Galen¶ in which the patient, one of his fellow-students, lay motionless like a log, with his eyes open; but he heard and remembered what occurred during the paroxysm. A remarkable case is related by M. M. Lenormand, seen also by Laennec and Recamier, in which there was complete immobility, rigidity of the whole body, pulse weak, expression of the countenance natural, and abolition of all the senses, except that of hearing; the patient (a young female) heard every thing that was said in her presence, but totally unable to make the least sign or utter the weakest sound. In the course of the third week, her hearing also failed, and her limbs became flexible, and readily assumed any position in which her attendants placed them. During the intervals of the attacks, she suffered

* Comment. vol. x. p. 183.
† Comment. on the History and Cure of Diseases, p. 291.
‡ American Medical Register, vol. i. art. viii.
§ Study of Medicine, vol. iii. p. 387.
‖ Patholog. lib. v. cap. xi. p. 70.
¶ Liber i. Prorrhetic. p. 756.

much anxiety and pain in the pit of the stomach.* It is even stated that instances have occurred of catalepsy on one side only.†

In some cases the respiration and pulse become so feeble as to be imperceptible, and the whole surface is cold and contracted, as in death. The flexibility of the limbs, however, remains throughout—a circumstance which is never observed in *dead* subjects.‡

The duration of the cataleptic attack varies from a few minutes to several days. A deep inspiration generally announces the return of consciousness, sensation, and voluntary motion. In many cases the paroxysm passes off suddenly, the patient recovering in an instant all his mental and physical powers. I saw a case lately with my friend Dr. Stadiger, which regularly recurred three or four times daily, and in which the paroxysms never continued longer than between one and two minutes, and always came on and passed off suddenly. In other instances, particularly in those of protracted duration, the attack goes off gradually, the power of feeling and motion generally returning first in the fingers, then in the arms, and finally in the whole of the body. In transient cases, the patient experiences no unpleasant feelings, or sensible diminution either of the mental or corporeal powers, after the paroxysm; in others, a feeling of weight and fulness in the head, with slight cephalalgia, lassitude, and some degree of sensorial obtuseness remain for some time after the attack has passed off. The cataleptic attacks in some instances recur with more or less frequency for months or even years; but it has very rarely been found to assume a strictly periodical character. Sometimes several attacks may occur in the course of one hour.§ F. Hoffman mentions the case of a woman in which upwards of one hundred paroxysms occurred during the period of forty days.‖ Occasionally individuals will suffer a cataleptic attack, without ever afterwards becoming affected with it again.¶

Catalepsy sometimes succeeds, terminates in, or alternates or becomes complicated with other affections. Dr. Lenormand's case, already referred to, was a most remarkable instance of this kind. The patient, a young girl labouring under pains in the stomach and menstrual irregularities, passed successively through nostalgia, fever, obstinate constipation, chorea, trismus, trismal catalepsy, complete catalepsy, chorea, a species of somnambulism, and finally hysteric symptoms, during the period of about eleven months. The disease has been known to alternate or terminate in epilepsy, anomalous

* Rev. Medicale Juillet. 1825.

† De la Metrie, Abrege de la Theorie Chymique, &c. p. 278. (Van Swieten.)

‡ Fitzpatrick. Medical Commentaries of a Society &c. of Edin. v. x.

§ Behreus.—Baldinger's Neu Magazin. B. ix. p. 207.

‖ Medic. Ration. System. T. iv. part iii. cap. iv.

¶ Vogel. Prælectiones de Cognosc. et Curand. Morb. p. 569.

convulsive disorders, soporose affections, and mental derangement.* It is sometimes modified by a very peculiar morbid excitability of the nervous system, giving it the character of *cataleptic hysteria*. In such cases, the patient will remain in a completely cataleptic state for some time, and then suddenly, without a recovery of consciousness, begin either to talk incessantly, or sing, or whistle, or declaim.† Fleisch calls this modification of the disease, *catalepsis loquax*. (Richter.) Sometimes catalepsy is connected with a species of somnambulism, the patient lying in what is familiarly called a *trance*.

The diagnosis of catalepsy depends chiefly, if not wholly, on the wax-like pliability of the extremities, and their maintenance of the position into which they are placed by extraneous force, together with the entire impossibility of the least voluntary motion. (Richter.)

The affection described in the books under the name of *ecstacy*, though differing in some respects from catalepsy, as described above, appears to be only a modification of this latter disease, or at least not essentially diverse from it. In its general phenomena, *ecstacy* partakes both of the character of tetanus and catalepsy. In ecstacy, the whole mind is concentrated, and as it were, fixed upon some particular object, and the motific nervous influx is strongly and regularly determined upon the extensor and flexor muscles; so that no other impression can affect the mind, and the whole body remains *rigid*. Authors, however, differ in their statements with regard to the state of the muscular system. Good says, that in ecstacy "the muscles are thrown into a rigid and permanent spasm, not incurvating the body as in the different modifications of tetanus, but maintaining it erect from an equal excess of supply (of nervous power) to the extensor and flexor muscles." Richter, on the contrary, states that the limbs may be bent by extraneous force as in catalepsy; but they do not, as in this latter affection, continue in the position they are placed, but obey the laws of gravity.‡ The higher grades of ecstacy are sometimes attended with visions, apparitions, &c. and may continue for many hours.§ Osiander speaks of a variety of *partial* cataleptic affections which sometimes attacks a single extremity in young females about the age of puberty. The limb swells suddenly, becomes insensible, incapable of voluntary motion, but remains pliable as in true catalepsy.‖

* Hirschel. Gedanken von der Starrsucht. p. 13.

† Sauvages. Nosolog. T. ii. P. ii. p. 418. Richter, Specielle Therapie. B. viii. p. 477.

‡ Loc. cit. Bd. viii. p. 481.

§ Braumer. de Differentia Ecstaseos et Catalepseos—as quoted by Richter.

‖ Osiander, Denkwuirdigk, &c. B. i.

Causes.—This affection occurs much more frequently in females than in males. The period of life at which there appears to exist the greatest aptitude to catalepsy is about the age of puberty. Persons of a nervous temperament, more especially when addicted to long and intense mental application, are said to be most subject to this affection.

The exciting *causes* of catalepsy appear to be as various as those of epilepsy. The disease not unfrequently arises from the influence of mental affections, especially from disappointed love. Tulpius relates a case of this kind;* and Schilling has collected similar instances.† Violent anger, protracted grief, hatred, and sudden terror, have produced this affection.‡ Long continued and intense mental application has excited the disease.§ Wepfer knew a young man who always became cataleptic when he applied himself to mathematical studies.‖ Fernelius saw a case brought on by close study. Repelled cutaneous eruptions, particularly itch and tinea capitis, have been known to give rise to this affection.¶ Suppression or irregularities of the menstrual evacuation appears to be one of the most common causes of catalepsy; yet the catamenial disorder, as Richter observes, is probably itself often only a concomitant occurrence, depending as well as the cataleptic affection upon some other morbid condition, particularly on intestinal irritation. That irritation in the stomach and bowels is often the direct exciting cause of the disease, is abundantly demonstrated by the cases that have been published. Van Swieten mentions the case of a woman seized with "true catalepsy," to whom he was called. While standing by her "she suddenly vomited up two live round worms," and immediately the cataleptic affection ceased.** Similar cases are related by Thom, Jawandt,†† Behrens, and others. A constipated and loaded state of the bowels also has been known to give rise to this affection. (Hirschel.) Catalepsy has been frequently found to occur in intermitting fever. Cases are related in which each paroxysm of this fever commenced with a cataleptic state.‡‡ Van Swieten quotes a case of this kind from Dodonœus; and Richter refers to Fleisch and Hirschel for similar instances. Tissot has seen catalepsy produced by

* Observ. Medicar. lib. i. cap. xxii—as quoted by Van Swieten.

† Disser. Ægrum ex Amore Catalepticum Factum Exhibens. (Richter.)

‡ Richter, Speciell. Therap. B. ix. p. 488.

§ The case already quoted from Galen was produced "by too much study." Van Swieten, l. c. T. x. p. 193.

‖ Observ. Med. Pract. de Affect. Capites. obs. 66.

¶ Burserius Instit. vol. iii. p. 137. Dufour. Jour. de Med. T. lxx. p. 418.

** Loc. cit. T. x. p. 191.

†† Hufeland's Journal, B. iv. st. iv. p. 784.

‡‡ Medicus Samml. u. Beobacht. B. ii. p. 372. (Richter.)

carbonic gas. It is said to have been excited by pregnancy.* *General plethora*; organic affections within the head; masturbation, &c. are also enumerated among the exciting causes of this disease.

It would be in vain to enter into any speculations concerning the *proximate* cause of this affection. We may indeed observe that there appears to be a complete dissociation between the moral and corporeal elements of the human system, so that the former can no longer be affected through the latter, or *vice versa*. At the same time, however, that the mind is thus incapable of being excited, or of exciting the body, the brain continues to secrete and transmit the motific influence to the muscular system, although its distribution is wholly beyond the control of volition. That the muscles are furnished with a regular influx of the nervous power, is evident from the fact, that the cataleptic patient, though entirely without consciousness and sensorial power, will maintain not only an erect and firm posture, but support the extremities in positions in which they can be kept only by a regular and equilibrious action of the flexor and extensor muscles. The metaphysician might draw interesting inferences from the phenomena of this disease, concerning the essential distinction between mind and the mere physiological functions of the sensorium commune. This, however, is not the place to indulge in speculations of this kind.

The *prognosis* in this affection cannot, in general, be regarded as very unfavourable. Van Swieten observes, "I have both seen from practical observations myself, and it appears from undoubted observations of celebrated physicians, that a great many have recovered from this disease, and afterwards enjoyed a perfect state of health."† Tissot makes the same remarks from his own experience. It may, nevertheless, terminate in fatal apoplexy, or in epilepsy, coma, melancholy or mania, and occasionally, though very rarely, the cataleptic paroxysm has been known to terminate fatally without the supervention of any other affection. (Richter.) In protracted cases of catalepsy the mind generally at last suffers more or less impairment of its powers; and in some instances, atrophy, emaciation, or dropsy are its consequences. When the cataleptic paroxysm is succeeded by weakness and numbness in some part of the body—particularly of one or more of the sensorial organs, together with a sense of weight, fulness, and confûsion in the head, or inactivity and absence of mind, the prognosis is particularly unfavourable with regard to its sanability; and the same remark applies to those cases which al-

* Osiander, Entwicklungs Krankheiten, &c. B. i. p. 182.
† Commentaries, vol. x. p. 197.

ternate with chorea, mania, or epilepsy. The occurrence of spontaneous sanguineous discharges—as hæmorrhois, epistaxis, or the catamenia, has been known to put a stop to the further recurrence of the disease. Those cases which come on about the period of puberty, often cease spontaneously after this stage of physical development has been fully passed over. Instances that depend on gastric irritating causes—such as worms, accumulated fecal matter, acrid secretions, or other moveable, offensive substances, are in general most easily cured.

Treatment.—In general the treatment of catalepsy does not differ materially, either in its particular indications, or remediate measures, from that which has already been described under the head of epilepsy. When the paroxysm is protracted, small doses of sulphuric or acetic æther may be administered, if the power of deglutition remains, and there are no signs of cephalic congestion present. Great caution, however, is to be practised in the use of internal stimulants. Frictions along the course of the spine, fomentations or stimulating applications to the feet, and enemata, may sometimes contribute to the removal of the paroxysm. When evident signs of vascular congestion of the head are present, and the pulse is not very feeble, blood should be taken from the arm, or by means of cups from the temples or back of the neck, and sinapisms or warm applications made to the feet, together with the use of purgative enemata. If a purgative can be introduced into the stomach, it ought, by all means, to be done,—more especially when there is reason to apprehend the presence of irritating matters in the intestinal canal. Reil states, that he once saw a girl affected alternately with mania and epilepsy, which instantly went off, on the expulsion of a number of lumbrici, by anthelmintics and enemata.* Galvanism and electricity, also, have been recommended in the cataleptic paroxysm; but they must not be applied in a strong degree. Richter refers to an instance, related by Thom, in which a young lady who was passionately fond of *music*, was roused from the cataleptic state by this delicious influence. Hard tones produced no effect on her, but soft and melodious ones brought tears from her eyes, and roused her as from a dream.

The treatment proper during the intervals of the cataleptic paroxysms, with the view of preventing their recurrence, should accord with the character of the occasional cause, the patient's constitutional temperament, and the state of the vascular system. In the cases that occur about the period of puberty in females, acting or exciting remedies will seldom do any good, but on the contrary often prove decidedly preju-

* Fieberlehre. Bd. iv. p. 72.

dicial; and when such instances are connected with suppressed or irregular menstrual function, the active emmenagogues should be particularly avoided (Richter). A proper regulation of diet, country air, regular exercise, tepid bathing, sea-bathing, chalybeate, and laxative mineral waters, will often do more in cases of this kind than any other course of remediate management. Where symptoms of gastric and hepatic derangement are present, the occasional use of four or five grains of blue pill, with a course of gentle laxative and tonic medicines, will often prove beneficial. A state of general plethora will require an abstemious mode of living, and abstractions of blood; verminous irritation demands anthelmintics; repelled cutaneous diseases call for external vesicating, pustulating, or irritating applications, with a gentle course of alterative and diaphoretic remedies; and a general excitable and weakened state of the nervous system, requires tonics, with antispasmodics, the narcotic extracts, or camphor, exercise in the open air, and the use of the tepid shower bath. Stark cured a case of catalepsy by assafœtida, galbanum, and infusion of the bulb of pæony; the extract of hyoscyamus, oxyd of zinc, valerian, musk, castor, and opium, (Greiner) have been successfully employed. Marx speaks very favourably of the powers of acorns in this affection. The sulphuret of iron, and belladonna, with the fetid gums, has been used with success; and Loebstein-Loebel recommends the use of phosphorus. In short, nearly every remedy that has already been mentioned, under the head of epilepsy, has been advised, and may perhaps be beneficial in certain varieties of this disease. The nitrate of silver, the elutriated oxyd of tin, flowers of zinc, mercury, cuprum ammoniacum, and the various antispasmodic and narcotic remedies have all been used, and sometimes, it is is said, with success.

CHAPTER VII.

CHOREA.

St. Vitus's Dance.

The first distinct account that was given of this disease is to be found in the writings of Plater and Senertus, both of whom

lived about the close of the sixteenth century.* Since that period it has been described under a variety of names, expressive of that peculiar saltant action of the extremities which characterizes the disease, such as *chorea St. Modesti, saltus viti, choreomania, ballismus, orchestromania, epilepsia saltatoria,* dance de St. Guy.

The name *St. Vitus's dance,* by which it is now familiarly known, was derived, according to Horst, from the chapel of St. Vitus near Ulm, to which women labouring under a certain nervous affection were in the habit of resorting every spring, where they danced violently and unremittingly from morning to night until they sunk down, completely exhausted, into a swoon, or a kind of ecstacy, by which exercise they fancied themselves cured for one year. Some writers place its origin at a much earlier date, deducing it from the very remarkable dancing mania which prevailed throughout Germany in 1374, and which, as it was thought to be the malicious doings of Satan, was generally treated by exorcism; and it is said that the monks of the convent of Korbey were particularly fortunate in casting out the fiend under the holy influence of their patron, *Saint Veit.*

Chorea rarely, if ever, comes on suddenly. Its approaches are always gradual under a variety of premonitory symptoms, varying in duration from a few days to several months, indicative of a deranged state of the digestive organs and nervous system. The most common of these symptoms are slight flatulent pains in the stomach or bowels, variable appetite, constipation, tumid and hard abdomen, occasional vertigo, anxiety and a feeling of oppression in the præcordial region, slight tremours and heaviness of the extremities, oppression in the chest, frequent palpitations, visual illusions, fulness in the head with temporary confusion of mind, a feeling of tension in the forehead, itching in the nose, cold feet, variableness of disposition, fluctuating between gloom and cheerfulness, and in some instances a remarkable proneness to mischievous and unruly conduct.

After some or perhaps the majority of these manifestations of deranged health have continued for a longer or shorter time, irregular muscular twitches or spasmodic contractions are observed in the face or one of the extremities. These spasmodic actions are, at first, slight and only occasional, and are particularly noticed on the sudden occurrence of any thing that flurries the mind. With more or less rapidity, however, they

* It has been supposed that Hippocrates alludes to chorea in the following passage, according to the version of Fœsius. "Medulla spina affecta homo nec crurum aut ventris officio potens est, nisi urgente necessitate; si vero morbus invaluerit tum aliquando præter voluntatem mejit et egerit."

become stronger and more constant until, at times, almost every muscle of the body is in a state of continued involuntary action. Not unfrequently, however, the morbid muscular action is almost entirely confined to one side of the body; and this is generally the left side. (Richter.)* From the imperfect command of the will over the voluntary muscles, the patient when he attempts to walk, has a starting, hobbling, and irregular gait, with an awkward dragging of one of the legs. Sometimes the involuntary muscular actions are so violent, and the empire of volition over them so completely lost, that progression, and even an erect posture are rendered wholly impossible.† The hands and arms too are in constant motion; the patient is often entirely unable to direct them; and in all cases, various ineffectual efforts are made before the hand can be brought to the desired point. Thus, in conveying food or drink to the mouth, the hand is generally forced in almost every direction except the intended one, and is at last brought to the lips only after a number of unsuccessful efforts.

The contractions of the muscles of the face are sometimes extremely severe and irregular, giving a continually varying expression to the countenance, often of the most ludicrous cast and occasionally truly frightful. The head is sometimes thrown from side to side, or backwards and forwards, the mouth suddenly widely opened and again forcibly closed, the tongue rapidly thrust out of the mouth and retracted, and the eyelids are in continued irregular motion. In violent cases, deglutition is much impeded, and, occasionally, for a short time entirely prevented by the spasmodic action of the pharynx and œsophagus. Respiration also is often anxious and irregular; the voice is altered, and articulation is indistinct and stuttering. Almost every voluntary muscle, in short, is at times in a state of uncontrollable and dissociated action. The authority and commands of volition are disregarded, and the whole muscular system is thrown into a state of revolt, its actions being irregular, lawless, and destructive to the welfare of the general constitution.

At first the expression of the countenance in the intervals of the spasmodic motions, "is that of good humour and content-

* Cases have been related, in which one leg and the arm of the opposite side alone were affected, (*Woeltche, Observationes Medicin. Fasecul. Richter.*)

† Occasionally all the muscles suddenly become completely relaxed; and instances have been known where the extremities have been so violently distorted as to dislocate some of the joints, (*Bruickman. Enerratio Choreæ St. Viti et Epilepsia per Fontis Medicatos Emenses Curatæ. Hufland's Journal.* Bd. iii. st. iv. p. 612. *Richter, Specielle Therapie.* B. vii. p. 735.) A case is mentioned in Baldinger's Magazine st. xii. p. 1095, in which the elbow-joint was dislocated, and in a few minutes again replaced by the violent contortions of this disease.

ment;" as the disease advances, however, the eyes lose their wonted lustre and intelligence, the face becomes pale, expressive of languor, and at last acquires a fatuous expression. Fleisch observes, that in many instances patients affected with this disease evince a peculiar and apparently irresistible propensity to creep into holes, boxes, or closets so narrow that it is sometimes difficult to extricate them from their confined situations.*

The temper and mind almost always become more or less affected in cases of a protracted character, more especially in very young subjects. I have seen several cases in which complete and permanent weakness of intellect was the consequence of this disease. In some instances, the patient occasionally lapses into a kind of *ecstacy* or somnambulism. (Richter.) Slight paralysis sometimes occurs on one side of the body. Nearly three years ago, I attended a child affected with this disease, in which incomplete hemiplegia and amaurosis in both eyes took place; and it is only within the last ten months that these paralytic affections have wholly gone off.

In some instances, chorea assumes very extraordinary forms. Sometimes the patient is seized with paroxysms of violent dancing, leaping, or stamping accompanied with various antic contortions of the body; at others there is a rapid and forcible beating with the hands against some part of the body, particularly the knees; occasionally an irresistible propensity to leap upon chairs, tables, and to clamber up the walls of the room is manifested; and patients have been known to stand erect and turn round, like a top, on the toes. Fever is not a necessary attendant on chorea, but when the disease continues long, the muscles become wasted and flaccid, and in cases of a very obstinate and protracted character, slow febrile irritation ensues.

During sound sleep, when volition is in a state of temporary suspension, (with regard to its influence over the voluntary muscles) all the spasmodic motions which characterize this affection cease entirely. Indeed the efforts of *volition* during the waking state, often manifestly aggravate the involuntary action of the muscles. It would seem that the stimulus of the will is in some degree essential to the production of the irregular muscular motions.

Chorea is a paroxysmal affection. In most instances several distinct paroxysms occur daily at irregular periods with little or no spasmodic action during the intervals. Sometimes, however, violent exacerbations take place once, twice, or oftener daily, with more or less of choreal action throughout the

* Handbuch der Krankheiten der Kinder, &c. B. iv. p. 419. Richter l. c. p. 734. Wichmann, Ideen zur Diagnostik. B. i. p. 137.

intervals. Occasionally, though indeed very rarely, the recurrence of the paroxysms is strictly periodical.* There is much diversity also in relation to the duration of the paroxysms. Sometimes they do not last more than ten or fifteen minutes; more frequently they continue for an hour or two, and occasionally they commence in the morning and do not cease until the patient sleeps at night. Cases have occurred in which the paroxysms continued with no obvious remissions for six or seven days.†

The touch of iron is said sometimes to have a very extraordinary effect upon this disease. Wichmann,‡ Richter, and others assert that the peculiar spasmodic actions of this affection either cease instantly, or become greatly aggravated, if the patient places his hands on a piece of iron during the paroxysm; and Stark says that he has often known the same effect produced by sprinkling cold water on the patient, or merely by touching him with a cold hand.§

Chorea appears to be very closely allied to the *tarantismus* of Apulia, an affection which has, indeed, by some, been regarded as a mere modification of this disease.‖ The *berberie* of India, also, would seem to be somewhat similar to chorea; and that singular convulsive affection, described under the name of *raphania*, which, from the latter part of the 16th to the middle of the 18th century, appeared in frequent and extensive epidemics in various parts of Germany and France, bore, in many respects, a close resemblance, in its chronic form, to the present disease.

Whether those remarkable nervous and spasmodic affections, which have been known to result from religious enthusiasm or frenzy, are to be regarded as instances of chorea, is very doubtful. Many very extraordinary examples of this kind have been related. Wierus gives an account of a choreal affection which occurred among the nuns of the convent of St. Brigitta. They were seized with occasional paroxysms of screaming, dancing, leaping upon chairs and tables, and various other ludicrous contortions and motions of the body.¶ The same writer gives the history of a somewhat similar affection, which prevailed in 1564, among the nuns of the convent Nazareth, near Koelln; the paroxysms of which were attended with very un-nun-like actions. "*Infima* corporis parte," says Wierus, "succusata ad eum modum qui veneri solet ascribi, occulis in-

* Mead. Opera. Tom. i. p. 32.
† Vogel, Stark, Richter.
‡ Ideen Zur Diagnostick. Bd. i. p. 153.
§ Handbuch Zur Kentniss u. Heilung innerer Krankheiten & Th. iii. p. 164.
‖ Swartz Dissert. de Farantismo, &c. Richter.
¶ J. Wieri. Lib. de Præstigiis. p. 378.

terim clausis," and it was concluded that nothing but the malicious workings of Satan could produce such mortifying and uncongenial phenomena.

Dr. Robertson, in his inaugural dissertation, states, that some years ago, an affection, resembling chorea, appeared among a religious sect in Tennessee, in consequence of an enthusiastic and noisy mode of worship, and was extensively propagated by the influence of imagination, or moral sympathy.*

Causes.—Chorea very rarely attacks persons beyond the 20th year of age;† and its occurrence before the 8th year is equally uncommon. Sydenham, Wichmann, and Thilenius, never met with this disease in children under ten years of age; but its occurrence even in early infancy is, nevertheless, unquestionable. About three years ago I met with an instance of well-marked chorea in an infant less than nine months old. This case was seen also by Dr. Parish. Hamilton,‡ Gregory, and other writers assert that this disease attacks girls and boys indiscriminately. Judging from my own observations, however, I should infer that females are by far more liable to this affection than males; and this inference is supported by the observations of several eminent writers. Van Hoven makes the relative proportion of males and females affected with chorea, as about two to twenty.

The constitutional habit, most favourable to the occurrence of this disease, is that peculiar excitable state of the common sensorium, constituting what is usually called the nervous temperament. It is said that the predisposition to chorea is sometimes hereditary; but this depends probably simply on the hereditary transmission of the general constitutional temperament. Cullen, Wichmann, and Jahn§ state, that this otherwise not very common disease, has been known to occur with unusual frequency during particular years or seasons; and it has been supposed, from this circumstance, that certain atmospheric constitutions may create a predisposition to its attacks.

* The Rev. Mr. Hoge, in a letter to the Rev. Ashbel Green, of this city, dated September 10, 1801, speaking of the Methodist revivals, says: During worship the members of the meetings "drop down on every hand, shrieking, groaning, crying for mercy, *convulsed;* professors praying, agonizing, fainting, falling down in distress for sinners, or in raptures for joy! No spectacle can excite a stronger sensation. I am told by the subjects of it, that a tremulous benumbing sensation seizes the extremities, particularly the fingers, which rapidly spreads through the system, the knees become feeble, the heart violently compressed, and the person drops to the ground.

† Dr. Powell knew an instance in which this disease occurred in a person in the 50th year of age.

‡ On Purgatives, &c.

§ Clinik. der Chronish. Krankheit. Bd. p. 245.

The following are the principal *exciting causes* of chorea: 1. *Mental emotions*, particularly terror, fear, disappointed love, and religious enthusiasm. 2. *Gastro-intestinal irritation* from worms, accumulation of fecal matter, and other irritating substances lodged in the intestinal canal. Hamilton and other late writers consider this as by far the most common source of chorea. That the disease very frequently arises from causes of this kind admits of no doubt. Its origin from intestinal irritation is not, however, so common, I think, as is alleged by Dr. Hamilton. Certain I am, that in the majority of instances that have come under my notice, the exciting cause did not appear to be located in the alimentary canal, and little or no advantage was derived from those remedies which are usually found beneficial in cases unequivocally dependant upon causes of this kind. Many cases of chorea have been reported which ceased almost immediately on the expulsion of worms—particularly the tape-worm.* 3. *Repelled chronic and acute cutaneous eruptions.* Bisset, an English physician, relates a case which came on in consequence of the repulsion of *itch.* Wendt saw an instance produced by the imprudent drying up of tinea capitis; and other authors mention cases excited by repelled small-pox, and miliaria, (Richter.) 4. *The supression of habitual discharges*, more especially of the menses. A case of chorea, in a girl about fourteen years of age, terminated fatally in less than three weeks. On dissection the whole body of the uterus was found as hard as cartilage, and completely scirrhous.† 5. *Unsatisfied* or *over-excited sexual propensities.* Richter states that chorea has been frequently cured by marriage. 6. Vegetable and mineral poisons have also been known to produce this affection. Stramonium. (*Comment. Litter. Norimburg. An.* 1774); mercury, (*De Haen Ratio Medend.* tom iii. p. 202) and lead have excited paroxysms of chorea. Dentition, pregnancy, parturition, and cold, are also mentioned among the exciting causes of this affection; and it appears frequently to depend upon rapid corporeal evolution, or that peculiar change of constitutional habit which occurs at the age of puberty.

The *pathology* of chorea derives little or no light from anatomical examinations. There are good reasons, however, for believing that it is essentially a cerebral affection. Its frequent occurrence from mental excitement; the intellectual weakness which almost invariably results from its protracted continuance; the suspension of the convulsive motions during sound sleep; and its exclusive confinement to the voluntary

* Albers. Hufeland's Journal. Bd. i. p. 152.—Baldinger's Neues Magazin. Bd. ix. p. 189.

† Richter's Specielle Therapie. Bd. vii. p. 749, quoted from Wiegand's Magazin. fur Geburtsh. 1808. st. ii.

muscles, point directly to the sensorium commune, as the immediate source of the irritation upon which the peculiar spasmodic actions of the disease depend. Unquestionably, however, the cerebral irritation is itself very frequently secondary, depending on a primary local irritation, located in some remote part of the system, and frequently, perhaps, in the alimentary canal. In some cases that I have seen, it appeared to me that the irregular muscular motions were not so much the result of *involuntary* muscular actions as of an *irresistible volition* to perform these peculiar motions. In those instances of the disease, at least, that are characterized by leaping on tables, chairs, dancing, clambering up walls, and other similar actions, the propensity or *will* to do so appears to be irresistibly exerted; and we might, with some plausibility, ascribe the characteristic phenomena of the disease to a morbid action of the faculty of volition, depending generally on a sympathetic, and sometimes an idiopathic irregular excitement of the brain.

Richter thinks that the proximate cause of chorea is seated in the system of ganglionic nerves, and particularly in the abdominal plexus. It is from this location of the primary irritation, he says, that the first manifestations of the disease generally occur in the feet; that gastric and uterine irritation so frequently constitute its exciting cause; and finally, that those remedies which act more especially upon the abdominal viscera, are usually the most beneficial. All these circumstances may, however, be adduced with equal plausibility in favour of the cerebral pathology of this affection.

Prognosis.—Chorea very rarely proves fatal, but it cannot be said to be entirely free from danger, as some writers have asserted.* I have known one instance to terminate fatally, by the supervention of a slow and wasting irritative fever. Occasionally it is converted into epilepsy, and may prove fatal through the intervention of this affection.† The duration of chorea varies greatly. It may continue only a few days, or several weeks, months, or even years. The more violent and protracted the paroxysms are, and the more the mind has become affected by its attacks, the more difficult, in general, it will be to effect a cure. When the disease becomes very protracted in its course, it rarely fails to weaken the intellect; and it has occasionally terminated in mental derangement, particularly in melancholy. Richter observes, that when chorea is complicated with other affections—as chronic pectoral diseases, scrofula, fluor albus, and in general with a debilitated and shattered state of the nervous system, the prognosis is unfavourable. When it arises from

* Wichmann, Baumes.

† Weigand, Hamburg Magazin. Fuir die Geburthsh. st. 1808.

the irritation of worms, or other irritating substances in the alimentary canal, it is generally readily cured by proper remediate measures. It appears to be less apt to yield, when it has been excited by terror or other violent emotions of the mind. Instances that occur about the thirteenth or fourteenth year of age in girls, generally continue until the sexual development is completely accomplished. Cases of this kind, if left to themselves, almost universally terminate spontaneously after the regular establishment of the catamenia. When the disease is arrested by remediate treatment before the changes of puberty have been accomplished, it is apt to return, and to manifest itself at intervals until the period of adolescence is passed.

Treatment.—The principal indications in the treatment of chorea, are, 1. To remove or counteract the exciting cause; 2. To invigorate the general system; and 3. To break up the train of associated actions by which the paroxysms are repeated or continued.

As the ordinary cases of chorea are almost álways devoid of danger, and often terminate spontaneously, after having for a considerable time resisted remediate treatment, it is not in general advisable to resort at once to very energetic remedies or modes of treatment. This observation applies particularly to those cases which depend on that peculiar constitutional metamorphosis which occurs during the period of puberty; for we may calculate almost with certainty on the spontaneous termination of such cases as soon as this stage of corporeal development is fully completed.*

Every one knows how strongly *purgatives* are recommended in the treatment of this affection, by Dr. Hamilton of Edinburg; and this practice has since obtained pretty general approbation in England and in this country.† Where the bowels are in a torpid state, with an accumulation of fecal matter, free and repeated purgation is, without doubt, a highly important measure; and in all cases, indeed, laxatives must be regarded as useful auxiliaries. That the power of this class of remedies as a curative measure, is, however, considerably overrated by Dr. Hamilton and others, I am much inclined to suspect. I have treated twelve or thirteen cases according to

* The importance of attending to these circumstances is particularly insisted on by Richter. Specielle Therapie. Bd. vii. p. 755.

† The employment of *active* purgatives for the cure of this disease, was particularly recommended long before the time of Dr. Hamilton. Stark speaks highly of the good effects of very active purgation in this disease, (Acten d. Kurfuirstl. Academie der Wissenshaftlen. 1776. p. 193.) Unzer also employed drastic purges with success in chorea. Sydenham treated this disease by purgatives and bleeding on alternate days, with an opiate at night. (*Schedula Monitoria de Novæ Febris Ingressu, an.* 1655.)

the plan laid down by this highly respectable writer, but have not, in more than two instances, derived the advantage from it that I was led to expect from his statements. As a preparatory and auxiliary measure to tonic and other suitable remedies, moderate purging will rarely fail to do good; but I question much whether any decisive impression can be made on this disease by purgatives alone, except in cases depending on intestinal irritation from fecal accumulations or other irritating substances lodged within the bowels. Where the signs of gastric impurities, or of a loaded state of the bowels, are unequivocal, mercurial purgatives should be given daily, or every other day, until there is reason to believe that the offending matters are evacuated, and the biliary secretion improved.* After the bowels have been freely evacuated, tonics should be used in alternation with laxatives. The quinine, or any of the ordinary bitter infusions, will answer for this purpose.—Whytt says that he has known the supervention of diarrhœa to put a permanent stop to chorea; and the very remarkable case, reported by Dr. Watt, after *active* purgatives, and a great variety of other remediate means, had been ineffectually employed, terminated at last, on the occurrence of profuse spontaneous diarrhœa. (*Med. Chir. Transact.* vol. v.)

In some instances, coming on from retained or suppressed menstrual evacuation, the general diathesis is manifestly phlogistic. Here, along with aloetic purges, it will be proper to *bleed*, and to put the patient on a mild vegetable diet, with an occasional dose of Dover's powder in the evening. About three years ago I attended a young lady, who was seized with chorea, apparently in consequence of suppressed catamenia. Her pulse was small, sharp, and tense; the skin generally dry and warm, and the bowels constipated. I directed her to be bled to the extent of twelve ounces, and to take one of the pills, mentioned below,† every night, and a small dose of sulphate of magnesia every fourth day. In the course of two weeks she was bled four times, and the disease disappeared during the third week. The menses did not reappear until five weeks afterwards.

* Hamilton recommends full doses of calomel and jalap. I have generally preferred using the following pills:

R.	Extract. colocynth. comp.	℥i.
	Calomel	℥ss.
	Tart. antimonii	gr. i.

M. Divide into 20 pills. S. Take one, two, or three, according to the age of the patient, every other day.

† R. Massæ hydrarg. ℥i.
G. aloes. ℥ss.
Tart. antimonii gr. ii.
M. Divide into 20 pills.

When the disease attacks persons of a highly excitable state of the nervous system—or of a strongly marked nervous temperament, peculiar benefit may often be derived from the cautious exhibition of antispasmodic and narcotic remedies. Valerian, *assafœtida in union with quinine*,* musk, hyosciamus, camphor, and opium, under judicious management, will sometimes do much good in cases of this kind.

In cases depending on suppressed catamenial discharge, attention must, in the first place, be paid to the alimentary canal. Laxatives, a mild and simple diet, with a few grains of blue pill at night must be employed until the bowels and liver are brought to a healthy condition. When this is effected, recourse may be had to remedies more directly calculated to promote the flow of the menses—particularly to turpentine, warm pediluvium, cantharides, blisters over the sacrum; small doses of aloes†—and, where the general habit and pulse are languid, savin, and black hellebore. Richter says that in one instance of this kind, he gave twelve grains of *borax* three times daily, with speedy and complete success. It should be recollected, however, that retained or suppressed menstruation may *accompany* chorea, without having any agency in the production of this affection—the catamenial disorder being itself only a concomitant effect of some previous general morbid condition of the system. It will, therefore, be more accordant with correct principles of practice, to endeavour rather to remove that general morbid condition upon which both the menstrual irregularity and the convulsive disorder depend, than to make vain, and too often injurious, efforts to restore the menses with active emmenagogue remedies. When therefore relaxation, debility, or a general leucophlegmatic state is present, tonics, particularly *iron*, a regulated diet, ventilation, and exercise by gestation, should be chiefly depended on: and, on the contrary, where the diathesis is phlogistic, the body plethoric, and the skin dry and warm, recourse must be had to depletion, purgatives, a vegetable or farinaceous diet, leeching about the pelvis, &c.

When chorea arises in consequence of suppressed perspiration from cold, or the retrocession of cutaneous eruptions, antimonials, Dover's powder, camphor, warm aromatic ptisans,‡

* Within the present year I have seen very decisive advantage obtained from the use of the following pill, taken every four hours, after proper evacuations had been premised:

R. Sulphat. quinæ ℈i.
G. assafœtid. ℈ii.

M. Divide into 20 pills.

† The compound tincture of aloes, in doses of from 15 to 20 drops three times daily, is one of the best aloetic preparations for this purpose. Small doses of *hiera-picra*, also, frequently answer peculiarly well, where there is considerable weakness of the stomach present.

‡ Infusions of elder blossoms, eupatorium perfoliatum, catnep, sage, marjoram, balm, &c. will answer well for this purpose.

the warm bath, blistering, rubefacient frictions, the internal use of sulphur, issues or setons, and a warm and equable temperature, are appropriate remediate measures. It is scarcely necessary to say, that where *verminous* irritation is manifestly present, anthelmintics should be used. In instances that are excited by mental emotions, musk and opium are said to be particularly calculated to do good.

Considerable advantage may sometimes be obtained in the treatment of chorea, whatever be its exciting cause, from external applications—such as dry frictions with flannel, or blistering, or rubefacients, along the course of the spine; stimulating baths; the cold shower-bath, and sea-bathing. The cold shower-bath, after a proper course of evacuants, and in connexion with the internal use of tonics, will generally contribute materially to the re-establishment of health.

If our endeavours to remove the disease, by a course of treatment founded on the indications furnished by the character of the exciting cause and the general state of the system, prove abortive, we may then resort to what the Germans, with strict propriety, call the *empirical remedies*, recommended in this affection.

Among these, the *flowers of zinc* have perhaps been most frequently employed, and favourably mentioned, as a remedy in chorea. Burserius,* Hand, Richter,† Stark, and Alexander,‡ relate instances of the successful employment of this article in chorea, and Dr. Beddingfield asserts that thirteen out of fourteen instances of this disease, in which he gave this remedy, yielded permanently to its influence.§ In my own practice I have never obtained any decided benefit from this article. The sulphate of zinc, however, removed the disease speedily and permanently in one instance that came under my notice. The patient, a girl about twelve years of age, had already been affected with the disease for upwards of nine months, and undergone various modes of treatment. A grain of this preparation was given three times daily; and, without any other remedies, the disease disappeared in less than ten days. A case is related which yielded speedily under the use of this article, given in doses of three grains, mornings and evenings.‖

* "Nuper confirmatam et numeris omnibus absolutam choream St. Viti solo floram zinci usu, tuto, cito et cucunde curavi." Institut. vol. iii. p. 242.

† Medic. and Surg. Observat. p. 153.

‡ Duncan's Annals.

§ Compendium of Medical Practice. Part i. chap. x.

‖ Memoirs of the Med. Society of Lond. 1773. vol. x.

Cuprum ammoniacum has also been used with success in chorea. *Willan* cured a case in a very short time with this article.*

The *nitrate of silver* has succeeded in removing this affection. I have used this article with success in a case that was excited by terror; but in no other instance has it appeared to be beneficial in my hands, although I have employed it in eight or nine cases at least. Dr. Franklyn cured a case of chorea by the conjoined employment of this article and cold affusions (*Lond. Med. and Phys. Jour.* No. LXVIII.;) and Dr. Powell used it with marked advantage in this affection. (*Transact. Lond. College of Phys.* vol. iv.)

The *rust of iron* will sometimes succeed better than any other remedy of this kind in the removal of this affection. The little patient, whom I have already mentioned, was cured by this article. I had employed a course of purgatives, the nitrate of silver, flowers of zinc, and vesication along the spine and on the back of the neck, without any apparent benefit. By the advice of Dr. Parish, the rust of iron was given; in less than three days a very decisive impression was already made on the disease, and in about three weeks all the convulsive motions were removed. I have since used this article in two instances with success. One of these, a little girl, was cured by it about two years ago. Within the last six weeks, she has again been seized with the disease, and in this attack I have not been able to obtain any advantage from the iron. It should be given in large doses. Dr. Elliotson administered this article in very large doses—from a drachm to half an ounce three times daily. He relates eight cases, all of which were cured by this remedy. (Med. Chirurg. Transact. vol. xiii.)

Chenopodium ambrosioides has been highly extolled for its powers in this disease. It was first recommended by Plenk, and has since been used very successfully by Mick, Ecker, and others.† It is given in powder from one scruple to a drachm, two or three times daily.‡

Camphor.—No small number of cases have been published illustrative of the good effects of this article in chorea. Pitt used it successfully in combination with valerian; and Wilson

* Lond. Med. Journ. vol. iii. p. 11. p. 187.

† Pinel's Nosography.—Translated into German by F. V. Ecker.

‡ I have used this plant in several cases of chronic hysteric affections with marked benefit. I usually employ it in the form of infusion—an ounce of the herb to a pint of boiling water—in doses of a wine-glass full four or five times daily. It is particularly useful in cases attended with a feeling of numbness in the extremities, and with much gastric disturbance from flatulency.

The chenopodium ambrosioides is one of the most common weeds in the neighbourhood of this city. It grows in the streets and along the fences in almost every part of the suburbs.

(*Med. Comment. Edinb.* vol. ii.) reports a case which yielded under the employment of camphor and assafœtida. Richter says that this article is particularly useful in cases attended with seminal irritation, or in such as are produced by inordinate venereal indulgence.

A variety of other remedies are said to have been used with advantage in this affection. Werlhof cured the disease with the *animal oil of Dipple.** *Cardamine pratensis* is recommended by Michaelis and Naegel; Stoll recommends the extract of belladonna, and Dr. Kerrison succeeded in curing an obstinate case with it.† Stramonium has been successfully employed in this affection by Kreysig, Hufeland, Odhelius, and Sidrèn.‡

Fowler's arsenical solution proved very beneficial in the hands of Dr. Newnham.§ Dr. Raven has published four cases in which the *tincture of colchicum* was used with great benefit.‖ In one instance of a violent grade in a girl aged about seventeen, he gave 40 drops of this tincture every four hours. On the third day after commencing with this remedy the disease was already nearly subdued; and by continuing its use in gradually augmented doses, perfect health was restored to the patient. A very remarkable case is related by Dr. K. Wood in the 7th vol. of the Medico-Chirurg. Transactions, which was cured by beating a drum during the paroxysms.

Electricity has also been recommended for the cure of chorea. De Haen states that he has known great benefit to result from the application of this agent; and Fothergill has published some remarks illustrative of its good effects in this disease.¶ Galvanism, also, has been recommended; and Richter asserts that *music* has sometimes produced astonishingly tranquillizing effects in this disease.

CHAPTER VIII.

HYSTERIA.

In relation to the diversity and variableness of its phenomena, hysteria is truly a "protean disease." It is essentially a

* Observ. de Febrib. sect. ii.

† London Medical Repos. No. XXXIV. art. ii.

‡ Ausfuihrliche Arzneimittellehre. Von Dr. Geo. Aug. Richter. B. ii. p. 589.

§ London Med. Repository, No. XLII.

‖ Lond. Med. and Phys. Jour. vol. xxxvi. Sept. and Oct. 1816.

¶ Philosophical Transactions, for the year 1779.

dynamic affection of the *nervous system*, manifesting itself by morbid phenomena in every sensitive and irritable part of the system, in the voluntary and involuntary muscular systems, in the sensorial organs, the brain, the intellectual faculties, the digestive apparatus, the various glandular viscera, in short, it presents in its multifarious symptoms every morbid sympathy, perhaps, of which the animal system is susceptible.

Hysteria may be divided into three modifications, namely, 1. *chronic or habitual hysteria;* 2. *paroxysmal or convulsive hysteria;* and 3. *hysteric insensibility or stupor*, without spasms of the voluntary muscles.

1. Chronic or habitual hysteria occurs in weak, delicate, and irritable habits, particularly in such as are affected with profuse leucorrhœa, or suffer frequent menorrhagic discharges. Females affected with this form of the disease are usually called *nervous*. They are almost always complaining of some unpleasant or painful sensations; their temper is variable, often fretful, sometimes animated, talkative, and anon peevish and gloomy; they pass often rapidly from laughing to crying, from gaiety to melancholy, from despondency to hope, and vice versa, from the most trifling causes. They often complain of various distressing sensations in the abdomen, head, or chest. Flatulency, a rumbling noise in the bowels, severe colic pains, a sense of weight and bearing down in the region of the uterus, pain in the neck of the bladder, dysury, a feeling of emptiness, or of fulness and tension in the pit of the stomach, variable appetite, slow digestion, eructations, occasional spells of great anxiety and alarm, palpitation, weakness and syncope, or a sense of sinking in the præcordia, ringing in the ears, confusion of mind, transient pains in various parts of the body, and the sensation of a ball rising in the throat to the top of the sternum, causing oppressed and hurried respiration, and a feeling of impending suffocation (*globus hystericus*) are among the most common symptom of this modification of the disease. A peculiar numbness or feeling, as if insects were creeping on the top of the head, is sometimes experienced; and a violent circumscribed pain, often not above an inch in circumference, is a frequent affection in this form of the disease.

Patients labouring under this form of constitutional hysteria seldom become affected with *convulsions*. The ordinary exciting causes of the hysteric paroxysm are much more apt to produce in them syncope, insensibility, or temporary mental derangement, or spasmodic and very painful affections of the alimentary canal, dyspnœa, and *globus hystericus*, than distinct convulsions.

2. The hysteric paroxysm usually comes on suddenly. Sometimes the fit consists in violent and convulsive laughing, alternating with crying and screaming; or attended with mental

alienation; rapid and incoherent talking; singing; suffocative spasms of the throat; a wild and furious expression of the countenance; raving; gnashing the teeth; tearing out the hair; beating the breast with the hands; biting, &c. Occasionally these symptoms subside without terminating in convulsions. More commonly, however, convulsions, of terrific violence, speedily supervene. The spasms usually partake more of the tonic or tetanic character, than of the clonic or strictly convulsive form. The body is rigidly bent backwards, or variously and most powerfully contorted; the breast projected forwards, and the head drawn backwards; the face swollen; the tongue protruded, or the jaws firmly closed; the eyes rolling, prominent, and red: the teeth gnashed; the fists clenched; the arms spasmodically thrown about, and the abdominal muscles violently contracted; in short, the whole muscular system is thrown into such violent spasms, that scarcely any attempt of the by-standers is sufficient to restrain the contortions, or prevent the patient from being thrown out of bed. When the paroxysm ceases, the patient is left in an exhausted, and stupid or somnolent condition, which in the course of an hour or two passes off, without leaving any other affections than a feeling of general soreness, and a slight pain or uneasiness in the head and pit of the stomach. This form of hysteria does not often occur in very weak and delicate individuals, habitually labouring under the former variety of hysteric symptoms. It is more commonly met with in sanguineous, plethoric, and robust females, of strong passions, and occurs usually, as the immediate consequence of some disagreeable mental emotion, or the sudden suppression of the catamenial discharge.

In plethoric and irritable habits the hysteric attack occasionally seizes chiefly on the heart and arteries, giving rise to what the older pathologists called *turgescentia nervosa*.* The face becomes flushed and turgid; the heart palpitates violently; the pulse beats tumultuously; the carotids throb; the patient complains of headach, becomes slightly delirious, and often experiences transient pains in the side, with hurried and anxious respiration.

In some instances the paroxysm assumes the phenomena of violent asthma, with a highly excited state of the vascular system. Sometimes the disease assumes the form of severe cholera, with extreme gastric pain, and continued retching or vomiting.

3. In some instances the patient, without any previous spasmodic affections, sinks into a state of complete insensibility. She lies on her back, with the extremities extended and relaxed, the eyes closed, the teeth firmly locked, and the breathing

* Richter, loc cit. vol. vii. p. 445.

slow and intermitting, but without being laborious or audible; the pulse is generally regular, slow, and small; the countenance natural or pallid; the extremities cool; and the sensorial functions and power of swallowing appear to be entirely suspended. Occasionally a deep and long inspiration is made; and the patient is apt, when some degree of sensibility returns, to tear the clothes from her bosom, or to press upon it with both her hands. Sometimes young females will continue in this state for many hours. I have known it to last a whole day; at others the paroxysm is transient. It generally passes off rather suddenly. The patient awakes, as it were from a deep sleep, suddenly raises herself into a sitting posture, looks about with an air of surprise, and speedily recovers the entire possession of her mental and corporeal powers. During this state of hysteric stupor the urine is almost always retained, or perhaps suppressed, and soon after its subsidence a large quantity of a pale or watery appearance is commonly discharged.

This modification of the hysteric paroxysm is most apt to occur in young unmarried females, from sudden suppression of the menses, or a consequence of violent mental emotions—and perhaps still more commonly from taking heavy and indigestible food during the catamenial period.

Pathology.—Hysteria, though not exclusively, is chiefly confined to females. It never occurs during childhood, and its appearance in the form of convulsions or distinct paroxysms in old age, is almost equally uncommon. The range of its sway is almost entirely confined to the period which intervenes between the commencement, and the complete cessation of the uterine functions. It is particularly apt to occur, in its less violent forms, at the latter critical epoch of female life; and paroxysmal or convulsive hysteria occurs often shortly before and after the first appearance of the catamenia.

There is, therefore, something peculiar in the female organization, which renders them so especially the subjects of this remarkable affection; something, we may presume, distinct from mere delicacy of structure and nervous irritability; for although men of nervous temperaments and weak and irritable habits may occasionally suffer some of the lighter symptoms of hysteria, they very rarely, if ever, so far as I know, become affected with the true hysteric paroxysm. Let us advert then to the circumstance that the susceptibility for this disease commences only with the development of the proper uterine or sexual functions, and again diminishes, and finally ceases, with the entire cessation of these functions,—that, in short, the period of life during which the *uterus* maintains its influence or sympathies in the female system, is that period also to which the occurrence of hysteria is almost exclusively con-

fined, and we are led to the conclusion that, in some way or other, the female generative organs have an intimate concern in the production of this affection.

From these and other analogous circumstances, it has been inferred that the proximate cause of hysteria is located in the uterus—a doctrine which is indeed expressly implied in the *name* given to this affection. Hippocrates, Zacutus Lusitanus, Fr. Hoffman,* Rave, Salmuth, and more recently Villermay, entertained this view of the pathology of hysteria; and Richter observes, that the generative system is "*very frequently*" the point whence the morbid sympathies, which give rise to the hysteric phenomena, radiate; and that, in such cases, the disease may, in certain respects, be regarded as proceeding from the sexual organs.†

The general opinion at present, however, is that the brain, and not the uterus, is the essential seat of hysteria; and there can be no doubt indeed, that the convulsive form at least, as well as many other morbid phenomena manifested by the disease, are directly dependant on cerebral irritation. It appears, nevertheless, highly probable also that many symptoms belonging to this affection, are the immediate result of an irritation located in the ganglionic system of nerves, exclusive, perhaps, of any direct dependency on cerebral reaction. Hysteria is emphatically a *nervous* affection. Its fundamental condition would appear to consist in an extremely sensitive and excitable state of the whole nervous system, and a consequent inordinate activity of the various organic sympathies. We may presume, that if in a system thus constituted, an irritation occurs in *any part* of the body, it will be rapidly transferred either to the organs which maintain the closest sympathetic relation with the part primarily irritated, and give rise in them to local pain, or spasm, or uneasiness; or to the brain causing disturbance of the intellectual or sensorial functions, and being thence reflected upon the muscles and other parts, exciting spasms, pain, and convulsions.

Causes.—The *predisposition* to hysteria depends sometimes on a peculiar constitutional habit: and in some instances is manifestly hereditary. Girls of a delicate and relaxed habit of body, light hair, blue eyes, a fair skin and sanguineous habit, with precocious intellect, animated dispositions, lively fancy, and early sexual development, are in general most liable to hysteric affections in after-life. Very generally, however, the predisposition to hysteria is *acquired* from the influence of causes that tend to produce plethora, nervous irritability, and general relaxation. This affection is, comparatively

* Med. Rationel. Systema. Tom. iv. p. 161.
† Specielle Therapie. Bd. vii. p. 451.

speaking, not often met with in individuals inured to an active or laborious course of life, or accustomed to a plain and regular mode of living. Like gout, it is much more commonly encountered in the mansions of the rich and luxurious, than in the hovels of the poor and laborious. Indolence, sedentary habits, a pampered and luxurious mode of living, the too early and over-strained exercise of the mind, the habitual excitement of the imagination and of the moral sympathies by the perusal of high-wrought descriptions of affecting incidents, or of circumstances calculated to awaken and keep alive agitating emotions, are among the most common and influential causes of the nervous or hysteric predisposition. The depressing passions also have a powerful tendency to predispose to, as well as to excite hysteric affections.

The *exciting causes* of hysteria are exceedingly various. They may, however, be arranged under the following heads:*

1. *Those which act immediately upon the sensorium commune.*—Violent anger, terror, grief, jealousy, remorse, envy, disappointed ambition, prostrated hope, hatred, loss of reputation, unfortunate love, mortified pride, opposed desires, in short, whatever strongly agitates or affects the mind may excite hysteric symptoms. Under this head we must also place the production of the disease by the sight of persons labouring under the hysteric paroxysm. Osiander relates some very remarkable instances of this kind;† and cases excited in this way are mentioned by Tissot,‡ Whytt, Rowley,§ Reil, and others.

2. *Disagreeable impressions on the organs of sense, depending generally upon idiosyncracy.*—Richter states that acute and melting tones, particularly those produced by the *Harmonica*, have often suddenly excited hysteric affections. Disagreeable odours, also, sometimes produce this effect; and the same consequence has been known to result from certain impressions received through the sense of touch.

3. *Irritating substances lodged within the alimentary canal.* In persons predisposed to hysteria, indigestible and irritating articles of food are particularly apt to excite hysteric affections. This is one of the most abundant sources of those habitual hysterical complaints so frequently met with in females of nervous temperaments and weak digestive powers. Intestinal irritation from wind, acrid secretions, or worms, may also give rise to this affection.

4. *Suppressed evacuations.*—The sudden suppression of the

* Richter, l. cit. Bd. vii. p. 456.
† Entwickelungs Krankheiten. vol. i.
‡ On the Diseases of the Nervous system, vol. ii.
§ On the Diseases of Females.

catamenial discnarge during its flow, often gives rise to extremely violent paroxysms of hysteria. The remote cause in instances of this kind is, usually, *cold*—particularly the application of cold to the feet while the menses are flowing, or just about making their appearance. Authors mention, also, suppressed perspiration, and hæmorrhoidal discharge, among the exciting causes of this disease; and repelled chronic cutaneous eruptions are said, occasionally, to give rise to hysteric affections.

5. *Excessive evacuations.*—Inordinate sanguineous or serous discharges may, perhaps more frequently act as predisposing, than exciting causes of hysteria. Be this as it may, it is certain that females who are affected with profuse leucorrhœa, or frequent menorrhagia are peculiarly liable to hysteric complaints. Excessive hæmorrhoidal evacuations, chronic diarrhœa, profuse lochia, and nursing infants too long at the breast, appear to be particularly favourable to the occurrence of various nervous affections.

6. *Causes that tend to augment the sensibility and to produce a habitual erethism of the sexual organs* have, without doubt, a powerful influence in the production of hysteria.* The frequent excitation of voluptuous feelings by improper reading, conversation, pictures, or the workings of an unchastened and active imagination, &c., are, I apprehend, not unfrequently deeply concerned in the causation of this affection. Where the sexual propensity is early developed and supported by influences of this kind, and its gratification firmly resisted by moral restraints, or unsatisfied from less praiseworthy motives, hysteric paroxysms are particularly apt to occur. Hence, perhaps, the occasional removal of the hysteric diathesis in young females by marriage.

Diagnosis.—Many eminent pathologists have regarded hysteria and hypochondriasis as essentially the same affection.† The general opinion at present, however, is that they are distinct diseases; and this is unquestionably the correct view of the case. The following are the prominent distinguishing characters of these affections:

1. Hysteria occurs chiefly in individuals of nervous, irritable, and plethoric habits, of great mental and corporeal excitability, quick perception, rapid transitions of disposition and temper. Hypochondriasis, on the other hand, very generally attacks persons of sluggish, melancholic temperaments, inirritable fibre, addicted to deep and fixed reflection, musing, and revery.

* Richter. loc. cit. B. vii. p. 460.

† Stahl, Sydenham, Whytt, Tissot, Van Swieten, Selle, K. Sprengel, Henke, and Zimmerman were of this opinion.

2. Hypochondriasis is not so variable in its phenomena, and more protracted in its course, with less manifest remissions and exacerbations than hysteria.

3. Hysteria generally comes on and goes off suddenly, and is attended with an increased excitability of the nervous system, and with various painful and spasmodic affections. Hypochondriasis almost always approaches slowly, without spasm or distinct pain, and gradually increases in violence, and again goes off in the same gradual manner.

4. In hypochondriasis the primary irritation is much more dictinctly seated in the abdominal viscera; the digestive and hepatic functions are more prominently and permanently affected than in hysteria.

5. In hypochondriasis the mind is, as it were, paralized—fixed with steadfastness upon some engrossing subject. In hysteria the intellectual powers are versatile; often active, and sometimes wildly confused. Hysterical patients experience more corporeal sufferings—hypochondriacs more of mental distress. The former are more occupied with present complaints; the latter look into futurity with distressing and gloomy forebodings of distant evil. The hypochondriac feels himself an insulated, deserted, and doomed being—loses his sympathies for the world—even his natural propensities and passions are absorbed by the ruling idea. The hysteric patient, on the contrary, is often agitated by various emotions and feelings; he loves, hates, cries, laughs, hopes, fears, is garrulus or taciturn in rapid succession, and often apparently without any adequate causes.

Treatment.—Treatment proper in convulsive or paroxysmal hysteria.—The principal indications, in the treatment of hysteric convulsions are:—1. To obviate inordinate asnguineous congestion in the head, by depletory and revulsive applications; 2. to allay the morbid excitement in the nervous system by anodyne and antispasmodic remedies; and 3. to remove, as much as may be in our power, the local irritating causes upon which the irregular determinations and morbid actions, both of the nervous and sanguiferous systems, depend.

It has already been observed, that strong sanguineous determination to the head perhaps always occurs in the hysteric paroxysm. The suffused and turgid face, projecting and blood-shot eyes, distention of the jugulars, and throbbing of the carotid and temporal arteries, so generally noticed during a fit of hysteric convulsions, are sufficient evidences of a highly congested state of the encephalon. If, in addition to the signs of inordinate sanguineous determination to the head just mentioned, the pulse be active, full, or tense, or the general habit of the patient manifestly plethoric, bleeding to an ex-

tent sufficient to make an evident impression on the pulse should be immediately practised. This is not only a proper precautionary measure for obviating any serious consequences that may result from the strong vascular turgescence within the head; but it is also decidedly beneficial as a preparatory step to the employment of other remedies.* This evacuation is especially useful in cases that occur in young and sanguineous females, from the sudden suppression of the catamenial discharge. In instances of this kind, an efficient blood-letting rarely fails to moderate the symptoms very speedily, and occasionally, to induce a complete intermission of the spasmodic actions. With the view of equalizing the circulation and nervous excitement, *sinapisms* to the inferior extremities, or, if practicable, *warm pediluvium* may also be very beneficially applied.

In prescribing internal remedies in the hysteric paroxysm, it is of much consequence to pay particular attention to the nature of the exciting cause. When the paroxysm is the immediate consequence of gastric irritation from indigestible or irritating articles of food, an emetic should be immediately administered, and vomiting excited as speedily as possible. I have frequently administered the *sulphate of zinc* in such cases, with the happiest effect. The usual antispasmodics will do little or no good in instances arising from causes of this kind; and it is therefore particularly necessary, on being called to such cases, to inquire into the nature of the ingesta or diet taken previous to the occurrence of the paroxysm. In some instances depending on gastric irritation, the convulsions alternate with violent retching, attended usually with excruciating pains in the stomach. When this happens, vomiting should be encouraged by copious draughts of tepid water, or by moderate doses of ipecacuanha. As soon as the offending contents of the stomach are entirely thrown off, a *full dose* of laudanum should be administered, provided no symptoms of strong cephalic congestion be present.

When the hysteric paroxysm is excited by mental emotions, narcotic and antispasmodic remedies are appropriate means. Laudanum, assafœtida, musk, sulphuric æther, and castor, may be employed for this purpose. *Laudanum* is particularly valuable in hysteric affections resulting from moral causes. It may be given by itself, or, perhaps, more advantageously in union with æther or assafœtida, according to the following formula.†

* Dr. Dewees, Treatise on the Diseases of Females, p. 486.

† R. Tinct. opii ℥ss.
Æther sulphu. ʒii.
M. S. From 40 to 80 drops, and repeated according to its effects on the system.

It is sometimes impossible to introduce any medicines into the stomach during the hysteric paroxysm. When this is the case, antispasmodic and anodyne enemata ought to be resorted to. From twenty to thirty grains of assafœtida, dissolved in six or eight ounces of water, with the addition of a teaspoonful of laudanum, may be thrown into the rectum.

In those violent paroxysms of hysteria which sometimes occur in consequence of the menses becoming suddenly arrested during their flow, from the application of cold to the feet, bleeding, sinapisms to the ankles, warm pediluvium, and particularly *turpentine enemata*, with the internal use of assafœtida, are particularly applicable. In an extremely violent case of this kind, in a young unmarried woman, I lately administered about half an ounce of the tincture of *secale cornutum* with prompt and very decided benefit. In ten minutes after this article was swallowed, the convulsive symptoms were entirely allayed. In very obstinate and protracted instances of this character, I have known great advantage to result from turpentine injections.*

My usual practice has been to repeat the terebinthinate injections until the bowels are well evacuated; and, when this is effected, to throw about two drachms of turpentine mixed with a drachm of laudanum, and a small portion of milk, into the rectum.

When the hysteric paroxysm precedes the eruption of the menses, camphor, or camphor with opium is, according to the experience of Dr. Dewees, the most efficient remedy. He recommends the following mixture for this purpose†—a mixture which I have myself employed with much advantage in such cases. Here also warm pediluvium, rebefacient frictions to the inner part of the thighs, warm bricks wrapped in dry flannel and applied to the pelvis, turpentine enemata, and cold applications to the head, are particularly indicated.

R. Tinct. opii ℥ii.
—— assafætid. ℥i.
M. S. A dessert-spoonful every half hour until the symptoms are moderated.

* R. Ol. terebinth. ℥iss.
Vitelli. ovi.
Solut. gum. arab. ℥viii.
M.

† R. G. camph. ʒii.
Spir. vin. rect. q. s. f. pulv. adde.
Pulv. G. arab. ʒiii.
Tinct. thebaic. acetat. gtt. Lx.
Sacch. albi. ʒiii.
Aq. fontanæ ℥vi.
M. Dose a table-spoonful every hour or two.

In that variety of paroxysmal hysteria in which the patient lies in a state of torpor and insensibility, distinct from syncope, I know of no remedy so effectual for dispelling the attack as an emetic. If a full dose of ipecacuanha, or of the sulphate of zinc can be introduced into the stomach and vomiting excited, complete recovery will generally speedily ensue. I have known patients, after having lain for several hours in a state of insensibility, awaken as from a sleep, sit up, and converse rationally almost immediately after vomiting was excited by an emetic. In cases of this kind, prompt relief may also sometimes be obtained from a large sinapism to the epigastrium. In a case which I lately attended, where vomiting could not be excited, although several full doses of ipecacuanha and sulphate of zinc were introduced into the stomach, I directed a strong sinapism to be applied over the whole epigastrium. In less than twenty minutes she suddenly raised herself, looked about with an air of surprise, and immediately began to vomit, which had the effect of soon removing every symptom of the complaint. Antispasmodic enemata too may be very beneficially employed in such cases,—and for this purpose nothing perhaps is so effectual as an aqueous solution of assafœtida. Opium and the more diffusive stimulants do not appear to answer well in instances of this kind. Much benefit may, however, be occasionally obtained by stimulating the olfactory nerves with ammonia, or the fumes a burned feather.

Besides the remedies already mentioned, a variety of other means may be employed with occasional success in the hysteric paroxysm. The injection of very cold water into the rectum will sometimes promptly allay the hysteric paroxysm. Riverius speaks particularly in favour of the injection of cold water and vinegar; and Darwin used ice-water with marked success. Great benefit may also, at times, be obtained from injections of a decoction of ipecacuanha, in the proportion of two drachms of the root to eight ounces of water.

Dr. Dewees considers the so common practice of exciting the olfactory nerves by stimulating volatiles, as of very doubtful propriety. In plethoric habits, and where there is much sanguineous determination to the brain, the impropriety of this practice appears indeed very obvious. Richter observes, that applications of this kind are equally apt to prove injurious in cases attended with great general nervous excitability. There exist, moreover, in many individuals subject to hysteric affections, very extraordinary idiosyncrasies in relation to particular odours. Some patients will be very disagreeably or injuriously affected by certain articles of this kind, yet greatly tranquillized or beneficially excited by others.

Richter mentions the case of a lady who was always readily roused from hysteric stupor or syncope, by the smell of old

and rank cheese. I know an hysterical female in this city, who is invariably very disagreeably affected by the smell of harts-horn, but the fumes of burning feathers rarely fail to produce beneficial effects. In some instances, the smell of strong vinegar does more good than the more volatile and pungent articles usually employed for this purpose. (Richter.) The smell of garlic bruised and moistened with vinegar, occasionally produces a very prompt and beneficial effect. We may sometimes suddenly arrest the lighter hysteric paroxysms by exciting some sudden emotion, as of anger, in the mind of the patient.

What I have hitherto said refers chiefly to *convulsive* paroxysms of hysteria. The most unmanageable and troublesome cases of this disease, however, are those chronic instances of hysteria usually denominated *nervous affections*, and which, though seldom marked by violent paroxysms, are nevertheless attended with frequent, and generally distressing nervous symptoms. As palliatives, the antispasmodics and narcotics already mentioned are very much employed in this modification of the disease. In general, *assafœtida* gives more perfect and prompt relief than any other article of this kind. Some patients, however, derive much more benefit from other antispasmodics. Indeed, there exists the utmost diversity with regard to the degree of relief obtained by different individuals from remedies of this kind. A mixture of sulphuric æther and laudanum* constitutes, with most patients, an excellent antispasmodic. Opium is, in truth, a most soothing remedy in chronic nervous affections. It allays the inordinate excitability of the nervous system; subdues for a time all unpleasant sensations and morbid sympathies; and diffuses a delightful feeling of tranquillity throughout the whole organization. Could but these effects be enjoyed without the risk of contracting a habit for taking this oblivious drug, opium would indeed be to patients of this kind the *magnum donum dei*. Let no nervous person, however, resort frequently to this medicine. It will come at first like an angel with its balmy powers to dispel pain, lowness of spirits, and mental disquietude of every kind; it will bring hilarity and pleasantness of feeling when its aid is first invoked; but it will not fail ultimately to insinuate itself into every fibre, and to cause indiscribable wretchedness and suffering to the unfortunate victim. In many individuals the ordinary preparations of opium, particularly *laudanum*, produce very disagreeable effects. Where such an idiosyncrasy exists, and the indications are favourable to the

* R. Sulph. æther ℥ss.
Tinct. opii ℥ii.
M. Take 30 drops every two hours until relieved.

employment of this narcotic, the acetated tincture of opium may, in general, be used without any unpleasant consequences whatever. Some patients who cannot take laudanum without very distressing effects, will feel no inconvenience from it if it be given with eight or ten grains of the carbonate of potash.

Castor, with some individuals, is peculiarly beneficial as a palliative. I have frequently known this article to procure much relief after the more active antispasmodics had been ineffectually used. It seems to be particularly calculated to do good when the disease is attended with much uneasiness and flatulent pains in the lower part of the abdomen. Some persons, on the contrary, cannot take this medicine without unpleasant consequences. I have usually employed the castor in combination with other articles of similar powers according to the following formula.*

In cases attended with much debility of the digestive organs, *valerian* often produces very excellent effects. From its gently tonic powers it is indeed peculiarly suited to such cases. The æthereal tincture is an excellent preparation for this purpose.† An aqueous infusion also, with the addition of 10 or 15 drops of the liquor ammon. succinata to each dose, or of four or five grains of super carbonate of soda generally answers very well.

The root of the *pathos fœtida* (*skunk cabbage*,) will occasionally afford much relief in chronic hysteric affections. I have very often prescribed this article with more than mere temporary advantage. A wine-glassful of the infusion (one ounce of the root to a pint of water) may be taken every four or five hours.

In some instances of chronic hysteria, emetics have been known to act very beneficially. Dr. Dean, of Harrisburg, observes, "in some cases where the patients had laboured under this disease for ten years, and during that time had, by the advice and direction of respectable physicians, exhausted, with at most, but temporary benefit, the whole class of remedies which are usually prescribed, I have, by the continued exhibi-

* R. Tinct. castor. ℥ss.
—— aloes compos. ʒii.
—— opii ʒi.
M. S. Take from 30 to 40 drops every hour until relieved.
R. Tinct. castor. ʒss.
—— valerian æther ʒi.
Liq. amon. succinat. ʒii.
M. S. Twenty drops every hour or two.
† R. Rad. valerian ʒi.
Æther sulphur. ℥viii. M. Digest for three days.
Dose from 30 to 40 drops.

tion of vomits, either entirely removed the complaint, or so far interrupted the habits of the diseased action in the stomach, that antispasmodic and tonic medicines would, in general, complete the cure."* I have, in a few instances, resorted to this practice with considerable advantage. Ipecacuanha is the proper article for vomiting in this affection.

In the management of chronic hysteria, it is particularly important to confine the patient to a light, unirritating and digestible diet. No permanent relief can be procured where this rule is not rigidly adhered to. It is equally important to enjoin regular, but not fatiguing exercise, by walking or gestation in the open air; and all unpleasant mental excitement or disagreeable sensorial impressions should be as much avoided as possible.

Particular and continued attention must, moreover, be paid to the state of the bowels. If they are torpid, it will be necessary to order some mild aperient, so as to procure regular alvine evacuations. For this purpose, I know of no medicine so beneficial in cases of this kind as the following pills.†

In the remediate management of this form of hysteria, it is especially necessary to attend to the exciting causes of the disease. Neither proper regimen, nor the use of anodynes, antispasmodics, or tonics will procure more than very incomplete and temporary advantage so long as a fixed local irritation exists somewhere in the system. The primary object, therefore, should be to ascertain, if possible, whether there is any source of irritation present. If no obvious exciting cause of this kind can be detected, which is indeed but very rarely the case, and the disease appears to depend mainly on a morbidly irritable condition of the nervous system, in connexion with general debility, advantage may be expected from the use of tonics, in conjunction with a mild, digestible, and nourishing diet; regular exercise in the open air, and agreeable society. The ferruginous preparations will, in general, answer better in cases of this kind than the usual vegetable tonics. Iron is a peculiarly valuable tonic in instances where, along with an irritable vascular system, the general habit is relaxed, enfeebled, and sluggish, and the digestive powers habitually feeble. The preparation I have found most beneficial in such cases is the

* Medical Recorder, vol. iv. p. 259.

† R. Massæ pill hydrarg. ℈ii.
G. aloes gr. xx.
Tart. antimon. gr. ii.
Pulv. capsici. ℈ii.
Mucilag. g. arab. q. s.
M. Divide into 40 pills. Take two every other night.

prussiate of iron.* When given in full and regular doses it scarcely ever fails to moderate the frequency of the pulse, whilst its fulness is increased. This article, in fact, possesses the power of at once diminishing the morbid irritability of the system, and of invigorating its powers. I have been much in the habit of employing it in diseases attended with great irritability and weakness, and frequently with the most decided advantage. It would seem that the prussic acid which it contains is sufficiently separated from its base by the vital actions to exert its peculiar influence on the system. The cold infusion of wild cherry bark also is an excellent tonic in chronic hysteric complaints. In cases of this kind much benefit may be obtained from the use of the shower bath, in conjunction with the measures just indicated. The water should at first be tepid and impregnated with salt, and the temperature afterwards gradually reduced in proportion as the energies of the system are invigorated.

Where, however, there is a fixed local irritation present tonics are in general not only useless, but frequently injurious. Should the irritation exist in the alimentary canal, from a torpid and loaded state of the bowels, a course of mild purgatives must be instituted before recourse can, with propriety, be had to tonics. In instances connected with menstrual irregularities, efforts should be made to obviate this source of general irritation. The most common uterine disorder accompanying and supporting chronic hysteria, is profuse leucorrhœa and prolapsus uteri. I have within the present year succeeded in relieving two patients, who had for many years been almost continually afflicted with distressing nervous symptoms and debility, by the use of astringent injections into the vagina, the introduction of pessaries, and the internal use of tonics. Both these patients laboured under profuse leucorrhœa, apparently entirely in consequence of very great prolapsus uteri.

Chronic hysteria is also frequently connected with habitual menorrhagic discharges. This is particularly apt to be the case about the period of the final cessation of the menses. In instances of this kind much advantage may sometimes be derived from minute doses of aloes, in conjunction with the use of from thirty to forty drops of the tincture of cinnamon three or four times daily.

In some instances chronic hysteria depends on phlogosis of the mucous membrane of the alimentary canal. I attended a lady last summer who had been almost continually affected

* R. Prussiat. ferri ℥i.
G. aloes. socc. gr. xv.
Conserv. rosar. q. s.
M. Divide into 30 pills. Take one every four hours.

with various hysteric symptoms for several years. She had used much medicine, but with little or no advantage. I found her epigastrium somewhat tense, and very tender to the touch. Leeches were directed over this region, and afterwards frictions, with tartar emetic ointment—and the lightest farinaceous diet enjoined. By the use of these applications, without any other remediate means, her health was completely restored.

Occasionally habitual nervous symptoms are excited and maintained by intestinal irritation from an accumulation of feculent and other irritating substances. When the bowels are torpid, the abdomen tumid and hard, the alvine discharges small and unnatural, the breath fœtid, the appetite variable, and the patient complains of an itching in the nose, a course of laxatives—or what is perhaps better, the daily use of purgative enemata, with a mild diet, an occasional small dose of blue pill, and small portions of infusion of any of the tonic vegetable bitters, constitutes an appropriate course of treatment.

When the disease is attended with a morbid exaltation of the sexual propensities—a circumstance which we sometimes detect by the actions and conversation of the patient—or of which we are informed by the candid and very proper avowal of the sufferer—*camphor*, in union with hyoscyamus—regular exercise, sleeping on a hard mattress, early rising, the cold or tepid shower-bath, and travelling, will rarely fail to afford particular benefit.

The cold bath is always a powerful auxiliary in the treatment of hysteric affections. Where the debility is great, tepid water ought at first to be used for bathing, and the temperature gradually diminished if we find the system sufficiently energetic to react after coming from the bath. In general, much more advantage will be derived from the *shower-bath* than from other modes of applying the water; and we may enhance the beneficial effects of the bath by adding a considerable portion of salt to it. Sea-bathing, with exercise by walking, or gestation, rarely fails to improve the health of nervous patients. Chalybeate mineral waters, in conjunction with agreeable society, and free motion in the open air, is also a most excellent remediate means in cases of this kind.

CHAPTER IX.

PUERPERAL CONVULSIONS.

Eclampsia Gravidarum et Parturientium.

The term *puerperal*, given to this form of convulsive disease, is not a very appropriate one; for the puerperal state is by no means necessarily connected either as a concomitant occurrence, or as the cause of this frightful affection. The condition of pregnancy seems, however, in some way or other, very essentially concerned in its causation. Dr. Dewees thinks that this disease may occur in pregnant women from causes unconnected with gestation. This may be true; but the state of pregnancy would, nevertheless, seem to have an especial agency in modifying or aggravating convulsions, from whatever immediate exciting cause they may arise. What, we may ask, gives to this variety of convulsive disease its peculiarly dangerous and fatal character? It can only be attributed to certain circumstances connected with advanced pregnancy, or with the process of parturition. It is indeed highly probable, that the disease under consideration is essentially an epileptic affection, aggravated and supported by the influence of the gravid uterus. Epilepsy is, manifestly, always attended with strong vascular turgescence in the brain, and the same condition is as obviously present in puerperal convulsions. Epilepsy is not, however, a very dangerous affection; whereas *eclampsia gravidarum* is always peculiarly hazardous. Whence then this striking difference of severity between these two affections? May it not depend chiefly on the tendency of the distended uterus in the latter period of gestation, to favour the determination of blood to the head, and to keep up the vascular turgescence in the brain? If by the peculiar position, or great distention of the uterus, the large arteries in the lower part of the abdomen are in some degree compressed, the blood will, one may presume, be more abundantly determined to the vessels of the head, and if the vascular turgescence in the brain be very strong, a paroxysm of convulsions may be the result. If then, a fit of convulsions is thus excited or brought on by causes not immediately connected with pregnancy, the paroxysm will be aggravated and supported by the continued effects of the enlarged uterus in determining the blood to the head.

In epilepsy attacking females in the early months of pregnancy, or in the unimpregnated state, there is but little immediate danger to be apprehended; for the vascular turgescence in the brain is not supported by a permanent cause of sanguineous determination to the head. When the disease, however, is excited by pressure of the uterus upon the large arteries in the lower portion of the abdomen, or at the entrance of the pelvis, the cause which in the first place produces the cerebral congestion, and consequently the convulsions, continues and maintains, or still further increases the vascular turgescence within the head, and can hardly fail to give rise to fatal effusion if the general mass of the blood be not promptly and greatly diminished by venesection, or the fœtus be not speedily expelled from the uterus to enable this organ to contract. The premonitory symptoms, the character of the remedies calculated to do good, and the phenomena of the disease itself, all indicate in the most unequivocal manner, that it is preceded and accompanied by strong sanguineous congestion in the head; and the exclusive confinement of the disease in its characteristic form to the latter period of gestation, when the uterus has attained its greatest volume, as well as the occasional complete subsidence of the convulsions when delivery is speedily effected, afford very plausible evidence that the cerebral congestion upon which the paroxysm probably immediately depends, is either the direct consequence of, or strongly promoted by an impediment offered to the arterial circulation in the abdomen from pressure by the distended uterus.

The attack of puerperal convulsions is invariably preceded by premonitory symptoms indicative of strong determination to the brain. In some instances, they are experienced for many days previous to the occurrence of the paroxysm; in others, they occur only a few hours before the supervention of the attack. They consist in a sense of fulness, weight, tension, severe and deep-seated pain in the head, vertigo, ringing in the ears, temporary blindness, weakness of the inferior extremities, a fulness of the vessels of the head, and occasionally a severe dull pain in the stomach.

After these symptoms have continued for a longer or shorter period, the patient is suddenly seized with convulsions. The muscles of the face are in a state of rapid convulsive action, and the whole body is frightfully agitated, as in severe cases of epilepsy. In some instances, the convulsive actions are stronger on one side than the other. During the paroxysm, the face is flushed, livid, and turgid with blood; the tongue is thrust out between the teeth; the carotids beat violently, and the jugulars and veins of the head are greatly distended; the respiration is at first hurried, with a sputtering noise of the lips,

and towards the conclusion of the fit, a copious discharge of frothy saliva issues from the mouth. The pulse is at first full, strong, and tense, becoming afterwards smaller, rapid, and eventually almost imperceptible. (Dewees.)

The subsidence of the paroxysm is always gradual; "the force and frequency of the convulsions abate; the pulse becomes more distinct and less frequent; the breathing is less hurried, and less oppressive; the face loses part of its lividity; the muscles are agitated only at intervals, and their action resembles the commotion excited by passing a brisk electric shock through them, and eventually sink into repose. The patient, however, remains for the most part insensible or comatose, with sterterous breathing or loud snoring; she cannot be roused by any exertion for some time, and if she recover, for a moment her scattered senses, she is without the slightest recollection of what passed. This truce is almost always of short duration; convulsion follows convulsion, without our being able to determine the period or the cause of their return."

Dr. Dewees has divided this affection into three varieties—namely, the epileptic, the apoplectic, and the hysteric. It does not appear clear, however, upon what grounds he has founded the second variety; for he points out no material circumstances by which it is distinguished from the epileptic variety. What he calls the apoplectic variety of the disease, is evidently only a higher grade of the epileptic variety, and differs from it merely in the greater degree of vascular turgescence in the brain, and the increased liability to fatal extravasation or effusion. Puerperal convulsions, as I have already observed, appear to be essentially epileptic—that is, immediately dependent on strong sanguineous congestion in the encephalon, from whatever cause this may arise. When the determination to the head is very great, the symptoms will assume more or less of an apoplectic character, or fatal extravasation may be the consequence.

The division of the disease into the *epileptic* and *hysteric* varieties, however, is founded on correct pathological principles, and is especially important in a practical point of view. It would indeed be more proper, perhaps, to consider them as distinct forms of convulsions—the one essentially hysteric, the other epileptic. Although hysteria is by no means a common affection after the term of quickening in pregnancy, hysteric convulsions may, nevertheless, occur from the ordinary exciting causes of this affection during utero-gestation, in individuals of a nervous temperament or an hysterical habit. The hysteric variety of this disease is often excited by mental emotions, and may be distinguished from the epileptic form, by the premonitory symptoms which are generally distinctly hysterical—such as violent palpitation of the heart, a feeling of

faintness, globus hystericus, a pale instead of a suffused countenance, &c.; and by the phenomena of the paroxysm, which, though indicative of violent nervous irritation, do not manifest any very violent degree of vascular turgescence in the head. The face is not much flushed, and, in some instances, remains even of a pallid hue. The larger muscles are agitated with extreme violence; and those on the posterior part of the body are generally thrown into a state of violent tonic contraction, causing a rigid recurvation of the body—the head and lower extremities being drawn backwards, whilst the breast, abdomen, and hips are thrown forwards into an arch, as in tetanus. "There is no frothing at the mouth; and the patient, after the fit, can for the most part, be roused by attention, or will frequently become coherent as soon as she recovers from the fatigue or exhaustion occasioned by the violence of her struggles, and though she may lie apparently stupid, she will, nevertheless, sometimes talk or indistinctly mutter. After the convulsion has passed over, she will often open her eyes and vacantly look about; and then, as if suddenly seized by a sense of shame, will sink lower in the bed, and attempt to hide her head under the clothes."*

Treatment.—From what has already been said concerning the pathology of this affection, it is manifest that in the epileptic form of the disease, the principal indication is to lessen as speedily as possible the sanguineous engorgement of the vessels of the brain. The treatment, in short, differs in no essential point from that which is proper in apoplexy. Blood should be promptly and copiously abstracted. This measure may be regarded as absolutely indispensable to success in the management of this affection. In a case which I lately saw in consultation with Dr. Dunn, nearly forty ounces of blood was at once abstracted. This evacuation, together with sinapisms to the feet and purgative enemata, succeeded in removing the disease, and the patient was, in about a week afterwards, delivered of a healthy child without any further unfavourable occurrences. In conjunction with copious abstractions of blood with the lancet, local bleeding by cupping from the temples or shaven scalp, may be of material service. Much benefit may also be derived from cold applications to the head, while sinapisms are applied to the inferior extremities. The rectum should be evacuated by laxative enemata; and as soon as the patient is able to swallow, an active cathartic ought to be administered.† These constitute almost the only useful or

* Dewees.

† R. Calomel gr. x.
P. jalap gr. x.
— aloes gr. v.
M. To be taken all at once.

proper remediate means in the treatment of this form of convulsive disease. When the disease occurs near the termination of the period of gestation, labour is almost always brought on; and it should be a rule to deliver as speedily as can be done with propriety; for the expulsion of the fœtus often puts a termination to the further recurrence of the paroxysms. Such a favourable result is, however, not always obtained from the evacuation of the uterus. When the onset of the disease has been violent, and the cerebral congestion is strong and continuous, the paroxysms will recur again and again after the delivery of the child is effected; and such instances rarely terminate otherwise than in death. If the os uteri is somewhat dilated and dilatable without much effort, it is best, nevertheless, to deliver at once by turning and bringing down the feet. I have, in two instances, delivered in this way with the happiest effect on the disease. In another case, however, a patient of Dr. M'Clellan, the result was not favourable. The delivery was easily accomplished, and the patient appeared to do well when I left her. She was induced, however, by her friends to take a little whiskey, "to strengthen her heart," (she was an Irish woman;) and the consequence was a return of the paroxysms, which soon terminated her life. When the os uteri is rigid, no advantage can be obtained by forcibly dilating it and delivering by the feet. In such cases, it is better to wait until the head is forced down in the cavity of the pelvis, and to deliver with the forceps as soon as it can be accomplished.

In the hysteric variety of the disease, bleeding, though not so absolutely indispensable as in the former variety, can, nevertheless, not be prudently dispensed with. In general, from sixteen to twenty ounces of blood taken from the arm will suffice in cases of this kind. Where, however, the momentum of the circulation is strong, and the symptoms indicate much sanguineous engorgement of the vessels of the head, the bleeding must be continued without any regard to quantity until the action of the pulse is decidedly moderated. The rectum should also be immediately emptied by purgative enemata, and sinapisms may be applied to the wrists and feet. If, from the constitutional habit of the patient, the nature of the exciting cause, and the premonitory and actual symptoms of the case, there is no reason to doubt of its hysterical character, recourse should be had, after the foregoing means have been used, to opiates and antispasmodics. A full dose of laudanum with an assafœtida enema, will, in general, answer better for this purpose than any other remedies of this kind. The case, in short, should be treated as a paroxysm of hysteric convulsions. Instances of this kind very rarely terminate fatally. Dr. Dewees has never known an instance of death from this variety

of the disease. It is equally rare that parturient pains are excited by this affection. When it occurs in the early periods of pregnancy, however, it may give rise to abortion—an instance of which occurred to me a few years ago.

CHAPTER X.

TETANUS.

Tetanus consists in violent *tonic* spasms of the voluntary muscles, with the powers of sensation and thought unimpaired. There exists, therefore, a radical difference between this disease and the affections which are properly called *convulsive;* for in the latter forms of spasmodic disease, there is almost always more or less disorder of the sensorial and intellectual powers, and the muscular affection is characterized by sudden contractions and relaxations, alternating in quick succession, giving rise to violent concussive motions of the body and extremities.

Tetanus is divided by nosologists into different varieties, according to the particular set of muscles chiefly affected. When the affection is confined to the muscles of the jaws and throat it is called *trismus*, or locked-jaw. Sometimes the extensor muscles of the trunk and inferior extremities are principally implicated, causing a rigid recurvation of the body, so as to bend it violently backward into the form of an arch—and this variety is denominated *opisthotonos*. The term *emprothotonos* is applied to the disease when the body is curved forwards; and *pleurothotonos* designates its lateral incurvation. These distinctions possess no practical importance—the disease being essentially the same in all of them. There is another distinction, however, founded upon etiological circumstances, which it is of more consequence, both in a prognostic and therapeutic point of view to bear in mind:—namely, the division of the disease into *idiopathic* and *traumatic* tetanus. The former term is applied to those cases which arise from the operation of general causes; such as cold, or narcotic poisons; the latter designates those instances which occur in consequence of some mechanical injury; such as wounds, bruises, burns, and other organic lesions.

Tetanus almost always approaches gradually,—so that several days often elapse between the first manifestations of its invasion, and its state of complete development. At first, slight spasmodic sensations are usually felt in the muscles of the larynx; in consequence of which the voice undergoes

some change, and deglutition sometimes becomes slightly affected. About the same time an uneasy sensation is occasionally felt in the præcordial region, and soon afterwards a feeling of stiffness occurs in the muscles of the neck, and about the shoulders. The muscles of the jaws now begin to stiffen. At first this rigidity is not so great as to prevent the patient from opening his mouth to a considerable extent. The contraction, however, increases with more or less rapidity, until the teeth of the upper and lower jaws are immovably pressed against each other. When the disease has advanced to this stage, sudden and painful retractions about the scrobiculus cordis occur at intervals, accompanied by a simultaneous retraction of the head, and an aggravation of the symptoms already mentioned. Deglution, even during the intermissions of these paroxysms, is now performed with pain and difficulty, and is apt to excite a return of the spasms. As the disease advances, the pain and retraction at the epigastrium return every ten or fifteen minutes, in exceedingly violent paroxysms, and are always immediately followed by a powerful spasmodic retraction of the head, and a rigid contraction of almost every muscle of the body. The muscles of the chest and throat are violently and painfully contracted; the arms and legs forcibly extended; the shoulders thrust forwards; the abdominal muscles firmly retracted against the viscera; and the whole frame thrown into a most painful and unyielding state of tonic spasm. These paroxysms last usually but a few minutes,—the muscles of the trunk and extremities resuming, for a while, a comparatively relaxed state; but those of the jaws remain firmly contracted during the remissions. In the latter period of the disease, the spasms remit but slightly and transiently: the patient is in almost a continued rack of torture; the muscular contractions are general and extremely violent; the countenance becomes frightfully distorted; copious sweats break out; the pulse is quick and irregular; the respiration hurried and laborious; the voice grating and unnatural; the eyes dim and watery, and the jaws immovably locked. Towards the fatal termination of the disease, slight delirium generally occurs. At this period a severe spasm often terminates the scene.

The usual mode of termination in fatal cases is by apoplexy. In some instances, all the muscles become completely relaxed a short time before death takes place. The patient seems to have emerged from his terrible malady. Every part of the body is in the ordinary state of relaxation. Suddenly, however, extreme prostration of strength ensues. He becomes insensible and comatose; the countenance assumes a cadaverous expression, and death speedily follows.*

* Richter, Specielle Therapie. Bd. viii. p. 368.

It is worthy of notice, that the muscles which are supplied with ganglionic nerves, as well as those which derive their nerves immediately from the brain, do not become affected until towards the fatal termination of the disease. The muscles of the fingers and the tongue are seldom affected until the disease has acquired its utmost degree of violence.

The mind is very rarely disordered in tetanus. I have seen instances in which the intellectual powers remained entire up to the last moment of the disease. The appetite and the digestive functions, also, are generally but little affected. During the paroxysms, the pulse is contracted, hurried, and irregular, and respiration is affected in like manner. In the remissions, both the pulse and respiration usually do not differ much from their natural conditions.

The duration of tetanus is various, although it commonly terminates before the fifth or sixth day, and not unfrequently as early as the third day. In some instances, however, it continues much longer, and occasionally it assumes a chronic character. (Richter.) When the disease is about terminating favourably, the remissions become more complete and protracted, during which, patients frequently experience a sense of *formication* in the extremities. It always passes off very gradually, and in general the pectoral and abdominal muscles are the last to regain their healthy condition. An increased irritability of the nervous system and general weakness continue several months after recovering from an attack of tetanus. According to the statements of some writers, tetanus sometimes passes into other forms of disease. Stark states that it has been known to terminate in remitting and intermitting fevers.* Instances have also been recorded, in which paralytic affections remained after the subsidence of the disease. (Richter.)

Causes.—Tetanus is most apt to occur in young and robust individuals of irritable habits of body. It is rarely met with in persons of very advanced age; new born infants, however, are peculiarly liable to its attacks. High atmospheric temperature appears to exert a powerful influence in predisposing the system to tetanus. It increases the general irritability, and by exciting inordinately the perspiratory function, renders the system more susceptible of the injurious influence of sudden applications of cold. It is on this account, that idiopathic tetanus is so much more common in hot than in the temperate and cold latitudes. In intertropical countries, it occurs most frequently along the sea-coast and in elevated situations. The cool sea-breeze during the night, after the heat of the day, seems in such localities to be the ordinary exciting cause of idiopathic tetanus. Schmucker states that tetanus occurred very

* De tetano ejusque specibus præcipuis, causis et ratio curandi, p. 169.

frequently in the Prussian army from slight wounds in the mountainous districts of Bohemia, where in summer the days are extremely warm and the nights uncomfortably cool.

The *exciting* causes, as has been already intimated, are of two kinds, namely:— such as produce local or structural lesion; and such as affect the system by a general influence. Of the former kind are wounds or mechanical injuries; and of these, contused, lacerated, and punctured wounds are most apt to give rise to this affection. Tetanus is particularly apt to follow wounds in which a nerve is partly divided or lacerated without being completely divided. The insertion of an artificial tooth, (Plenk;) including a nerve in a ligature passed round an artery; amputation; the extirpation of tumours; compound and comminuted fractures; gun-shot wounds; cutting corns on the feet too closely;* the sudden access or introduction of cold air into wounds, particularly of gun-shot wounds when the sloughs are about being thrown off, (Larrey;) in short, every kind of incised, punctured, lacerated, or contused wounds, however trivial, may, under favourable circumstances, give rise to this affection. I once met with a very remarkable instance which appeared to have been excited by the irritation of a dead fœtus in utero.† Tulpius mentions a case of tetanus from suppurative ulceration of the bladder in consequence of calculous irritation.‡ Richter has known it occasioned by the removal of an encysted tumour from the cheek; and De Haen mentions an instance which was excited by the

* I have seen a fatal case produced in this way.

† This case occurred about eight years ago. A poor woman in the 9th month of pregnancy, who resided at Bush-Hill, came to my office for medical advice. She walked into town and appeared to be healthy. She complained, however, of an inability to open her jaws, and I found that she could not separate the teeth more than about an eighth of an inch. She could assign no cause for this affection. I ordered her to be bled, and to apply a blister on the back of the neck. Next day I was requested to visit her. I found her much more indisposed than on the previous day, and the jaws were now firmly locked, with slight spasmodic contractions of the muscles of the throat. I bled her profusely, gave her another cathartic, and applied caustic potash over the tract of the temporal muscles and along the course of the cervical vertebra. On the following morning, I found her affected with distinct and general tetanic paroxysms, which gradually became more and more violent and frequent. In the afternoon, I discovered during the intermissions of the spasms, that labour had commenced. On examination, I found the os uteri considerably dilated, and the head of the fœtus in the cavity of the pelvis. I immediately sent off for a forceps, and in the course of about half an hour after, delivered her of a dead and partially putrid fœtus. The tetanus, nevertheless, continued and terminated in death on the following morning. I observed that the parturient contractions of the womb and the tetanic spasms recurred in regular alternation.

‡ Observ. Med. Amst. 1672. L. iii. cap. ii.

application of lunar caustic to a similar tumour.* A case is mentioned by Bajon,† which was caused by the application of an escarotic to an ulcer on the leg. Instances of tetanus produced by gangrenous wounds are mentioned by Mursinna,‡ Hopfengaertner, and White. The most dangerous wounds, however, in this respect, are punctures of tendinous, aponeurotic, and very nervous parts—as the palms of the hands, soles of the feet, and under the nails of the fingers and toes. Traumatic tetanus frequently does not come on until the wound which gives rise to it has cicatrized. Most commonly the disease supervenes about the eighth or ninth day, and this is especially the case when it arises from gun-shot wounds. Sir J. M'Grigor asserts that if tetanus does not occur within twenty-two days after the injury has been received, the patient may be regarded as free from danger on this account.§

Among the general causes of this affection, cold, suddenly succeeding high atmospheric temperature, is decidedly the most powerful. Sleeping in the open and cool night air, is a very common exciting cause of tetanus in hot climates. The influence of cold appears to be particularly favourable to the occurrence of this disease from wounds or mechanical injuries. I have already referred to the observations of Schmucker and Larrey on this point, and Mursinna has noticed this circumstance particularly. When the disease occurs from this cause, it generally comes on about the third or fourth day of the exposure. The very frequent or endemic occurrence of tetanus in southern climates—at Barbadoes, Java, St. Domingo, Cayenne, and generally in the Antilles, as described by Hillary, Pouppée, Desportes, Bajon, Moseley, Blane, Clark, and others, must be ascribed to the combined, or rather alternate influence of high atmospheric temperature, and of cold and damp night air. Tetanus may also be produced by drinking cold water while the body is in a state of free perspiration from fatiguing exercise in warm weather. Rush, Mursinna,‖ and Schuitz,¶ mention instances occasioned in this way. Tetanic spasms sometimes occur in the latter stage of severe forms of fever.

Pathology.—From seeing those muscles particularly affected which derive their nerves from the spinal marrow—whilst those which are supplied with ganglionic nerves are, in a great measure, exempt from spasm; as well as from the undisturbed state of the sensorial and intellectual functions, tetanus was,

* Ratio Medend. Pars. vi. cap. iv. § ix.
† Jour. de Med. T. xxx. p. 419.
‡ Jour. f. Chirurgie. 1820. B. i. st. iii.
§ Medico-Chirurg. Transact. vol. iv. p. 449.
‖ Jour. f. Chirurgie, B. i. st. iii. p. 406.
¶ Medic. Annalen. 1802, p. 756

at an early period of our science, referred to the *spinal* marrow as its primary and essential location.*

This view of the pathology of tetanus is founded on the phenomena usually detected in the spine on post-mortem examination; as well as on the artificial production of tetanic symptoms by certain mechanical injuries of the spinal marrow. Dr. John Frank was the first who directed the attention of physicians particularly to the morbid appearances of the spinal marrow in those who die of tetanus. In one instance he found the spinal marrow soft and considerably altered in structure, with effusion of serum between its coats, and an engorged state of the blood-vessels. In another case, strong traces of previous inflammation were detected throughout the whole extent *of one side* of the spinal prolongation.† Dr. Reid afterwards published a paper (loc. cit.) from which it would appear that the principal seat of the inflammation is in the membranes of the spinal cord. In an extremely violent case, he found a whitish soft substance deposited between the arachnoid membrane and the pia mater. In less violent cases, serous effusions were found between the membranes. Similar observations have been published by d'Outrepont, Walther, Saunders, Abercrombie, Broussais, Monot, Jobert,‡ and other pathologists. This pathology of tetanus is moreover supported by the fact, that tetanic spasms may be artificially produced in animals by thrusting a slender wire along the spinal canal, so as to irritate the marrow without materially compressing it. This experiment has been frequently performed by Dr. Walther of Berlin, with the most striking results; and similar consequences were witnessed from this operation by Le Galois, Philip, Brodie, and other physiologists. The fact, therefore, that strong marks of inflammation in the spinal prolongation of the encephalon are very common post-mortem phenomena in tetanus, appears to be sufficiently established. It may,

* Galen was of this opinion; and Willis, Fernelius, (*a*) Burserius, (*b*) Hoffman, and more recently Frank, Marcus, d'Outrepont, (*c*) Walther, Schaal, (*d*) Le Gallois, Brera, Thompson, Abercrombie, Harles, Rachetti, Esquirol, Copeland, Carter, Philip, Brodie, O'Bierne, (*e*) Reid, (*f*) Saunders, and others have expressed similar views.

† The side of the spinal marrow which was thus affected corresponded with the hand injured, that gave rise to the disease.

‡ Monot and Jobert's report of some cases that occurred in the Hospital St. Louis and St. Antoine. Medico-Chirurg. Rev. Jany. 1827.

(*a*) De Medicina Universa.—Pathol. vi. ch. iii. p. 417.
(*b*) Institutiones Med. Pract. vol. iii. p. 201.
(*c*) Salzburg. Medicinische Chirurgische Zeitung. No. XXXIV. 1818.
(*d*) Dissertat. de Tetano. Berol. 1820.
(*e*) Dublin Hospital Reports, vol. iii.
(*f*) Transact. of an Associat. &c. of the King and Queen's College of Physicians in Ireland, vol. viii.

nevertheless, be doubted whether these morbid conditions of the spinal cord be the proximate and essential cause of the tetanic spasms, or only secondary and one of the ultimate consequences of the disease. If on the one hand this view of the nature of the disease is favoured by the occasional successful employment of topical bleeding, blistering, irritating and cauterizing applications along the course of the spine; it is, on the other hand, as strongly discountenanced by the equally frequent beneficial effects of alcoholic liquors, and other powerful internal stimulants. It is highly probable, notwithstanding, that there exists, as an essential link in the chain of causation, strong irritation in the spinal marrow and its membranes, which, in most instances, gives rise to vascular turgescence and in the progress of the malady, to inflammation and consequent effusion or disorganization. Inflammation and its consequences are, I presume, not essential to the production of the disease, but a consequence only of the spinal irritation upon which the spasmodic affection depends.

Mr. Swan, a few years ago, published an essay on this disease, in which several cases are related, tending to show that tetanus depends on irritation and inflammation of the ganglia.* In the cases, which he reports, the ganglia of the great sympathetic manifested unequivocal marks of irritation and disease. The semilunar ganglion was, in most instances, strongly injected, and all the other ganglia of this nerve were more or less inflamed.

Prognosis.—The prognosis in this disease is always highly unfavourable.† Traumatic tetanus is particularly fatal in its tendency. Cases that depend on general causes are usually much more under the control of remediate management. That variety of tetanus which occurs in new-born infants (*trismus nascentium*) terminates, almost universally, in death. Parry asserts that if the pulse becomes very frequent on the first day of the disease, if it rises above 120 beats in a minute, the case may be regarded as inevitably mortal. When, on the contrary, it does not go beyond 100 or 110 beats by the fourth or fifth day, reasonable hopes of recovery may be entertained. "When the disease comes on gradually, and the muscles of the jaws are alone affected during the first three or four days; when the abdomen is not preternaturally hard, and the bowels obstinately costive; when the skin is moist and moderately warm; and above all, when the patient enjoys sleep, we may entertain strong hopes of an eventual recovery. An increased flow of saliva, where mercury has not been used, is always to

* An Essay on Tetanus, founded on Cases and Experiments. London, 1825.

† Aretæus very justly designates tetanus as inhumana calamitas, injucundus aspectus, triste intuenti spectaculum, et *malum insanabile.*

be regarded as favourable; and the less the general expression of the countenance is changed, the better. On the other hand, where the attack is violent and sudden; when the muscles of the neck, back, and abdomen, are rigidly contracted; when the patient complains of a shooting pain from the sternum towards the spine; when the belly feels hard, and the least pressure thereon produces spasmodic twitchings or contractions of the muscles of the neck, jaws, &c., or when the same effect is brought about by the presentation of any substance, solid or fluid, near the mouth, we may have much reason to fear a fatal termination."*

Treatment.—When a wound or injury has been received, from which tetanus may be apprehended, efforts should be made to prevent its occurrence by a proper management of the local injury. Experience has fully established the fact, that the best means for preventing the disease is the production of free suppuration in the injured part. When this process can be fully established in wounds, even of the most unfavourable character, the occurrence of the disease will almost certainly be prevented. It has been frequently observed, that the less inflammation there is in the injured part, the greater will be the liability to tetanus. This circumstance has suggested the propriety of exciting inflammation in the wounded part by means of irritating applications. For this purpose we may apply spirits of turpentine, *lunar caustic*, caustic lie, cantharides, or according to Larrey, the actual cautery, followed by warm stimulating poultices; or the part may be incised or scarified, and afterwards further irritated by some application of this kind. When nerves or tendons are but partially divided by the injury, the division should be completed by free incision. General remedies have also been recommended with the view of preventing the disease. Larrey insists strongly on the importance of peventing the access of cold and damp air to wounds, particularly gun-shot wounds, as a prophylactic measure. Dr. Thomas states, that in the British army, opium is mixed with the dressings as a preventive of this affection. Dr. Potter of Baltimore states, that he has found no application so useful, in this respect, as warm emollient cataplasms.† Dr. Clark‡ advises a slight mercurial ptyalism after unfavourable wounds, more especially in hot climates. An equable and comfortable temperature, with a simple diet and rest, are important auxiliaries in preventing the disease after wounds.

A very great variety of remedies and modes of treatment have been proposed, and occasionally employed with success

* Dr. Morrison.—Vide Johnson on Tropical Climates, vol. ii.
† Note to Gregory's Practice, vol. ii. p. 141.
‡ On the Diseases of the West Indies.

in this frightful malady. The practioner who consults the records of medicine for light on the remediate management of tetanus, will probably find himself very much perplexed. He will find the doctrine of its dependance on spinal and ganglionic *inflammation* strongly countenanced by examples of post-mortem phenomena; and yet he will read, on the one hand, the laconic, but sweeping denunciation against the most powerful antiphlogistic, "bleeding is to be condemned;"* whilst, on the other hand, he will find stimulants and tonics reprobated, and prompt and copious depletion pointed out as the sheet-anchor of our hopes. He will find Broussais and others, ridiculing the idea of treating tetanus with stimulants and antispasmodics;† and then, turning to Morrison and a great number of other respectable authorities, he will learn that these are the very remedies which, in their hands, proved most successful. These facts may be irreconcilable, according to our imperfect views of the pathology of this affection, but they are notwithstanding facts, and there is therefore something in the nature of the disease which, in spite of theory, renders both exciting and depletory measures, at times, decidedly beneficial. To me indeed these apparently contradictory statements appear to admit of a plausible though hypothetical explanation. Tetanus is manifestly an irritative disease.—In the traumatic variety, it would seem to be the result of a peculiar irritation, passing from the extremities of wounded nerves to their origin, giving rise to morbid action in that part of the nervous centre which more immediately presides over the powers of the voluntary muscles. Hence, opium and whatever is capable either of blunting the irritability, or causing a strong counter-excitement in the nervous system, may overcome morbid excitement and ultimately subdue the disease. As, however, all violent local irritation tends to produce congestion, and finally more or less inflammation in the part, this may at times be an early consequence. Here, general and local depletion will be proper; and, if promptly and efficiently practised, in conjunction with other suitable remedies, before effusion and disorganization have taken place, may prove successful. Nay, even direct depletion, and the liberal use of opium are not incompatible, for, while we diminish the momentum of the circulation on the one hand, we lessen, on the other, the morbid irritation upon which the disease and the inflammation depend.

No small number of cases may be cited in which copious blood-letting was decidedly beneficial. Mr. Barr bled a young man affected with traumatic tetanus, to the extent of fifty ounces at once, *pleno-rivo*. In half an hour the patient's jaws

* Elements of the Theory and Practice of Physic, vol. ii.
† Journal de Med. Phys. Fev. 1827.

relaxed in some degree, and three fluid drachms of laudanum were exhibited. The spasms continued, though in less violent and frequent paroxysms. He was afterwards bled to the amount of thirty-two ounces on the third day, and sixteen on the fourth. Exceedingly large doses of calomel and opium were also regularly given. On the fifth day, the disease yielded completely.* M. Lisfranc has reported a successful case, in which eight bleedings were practised from the arm, and in the course of nineteen days, six hundred and eighty leeches applied along the vertebral column.† M. Burmester treated a case of traumatic tetanus successfully by copious *blood-letting*, opium, mercury, and the warm bath.‡ We may also refer to the case reported by Dr. Alexander, which yielded to copious and repeated venesection, leeches to the abdomen, mercury, and active purging.§ M. Le Pelletier, chief surgeon of the hospital at Mans, in an able memoir on this disease, observes: "It is neurilematic inflammation that we must attack in the treatment of tetanus, and the only means sufficiently powerful to subdue it in its bud is *venesection*, not practised with reserve, but with the utmost degree of promptness and freedom.‖ Local bleeding by leeches or cups along the tract of the spine, is decidedly indicated in this affection." When we reflect, says Dr. Johnson, that the brain and spinal marrow must be the immediate seat of the irritation or inflammation which gives rise to the phenomena of tetanus, we can hardly look with confidence to any remedy which has not a strong tendency to remove this irritation or inflammation. What is more likely to effect this indication, than powerful and repeated depletion from the head and spine, but especially from the latter?¶

Purgatives, also, are important auxiliaries in the treatment of this affection. Dr. Hamilton recommends their use as a *principal* curative means; but he does not adduce any very decisive or direct evidence from his own experience, in support of the propriety of relying chiefly on their employment. He gives indeed some statements from his own practice of the good effects of active purgation in what "appeared" to him cases of incipient tetanus, but it may be reasonably doubted whether these instances were really tetanic. Unquestionably, cathartics deserve to be regarded as highly useful remedies in this disease, but we may with propriety, I think, demur, when we are advised to rely on them as principal curative means. In

* Edinburgh Med. and Surg. Journ. No. XVII.
† Rev. Médicale. tom. ii. for 1829, p. 341.
‡ Med. Chirurg. Transact. vol. xi. art. xiv.
§ Edinb. Med. and Surg. Jour. Octr. 1825.
‖ Revue Médicale. tom. iv. ann. 1827. p. 346.
¶ Medico-Chirurg. Rev. July, 1827. p. 176.

all instances, perhaps, it will be proper to exhibit active cathartics, not only with the view of removing the ordinary sources of intestinal irritation, but also as revulsive and depletory measures. From fifteen to twenty grains of calomel, followed in the course of four or five hours with a dose of castor oil and spirits of turpentine (an ounce of the former to two drachms of the latter) may be given in the commencement of the disease, and repeated according to the circumstances of the case. In that variety of the disease, which occurs in new-born infants, purgatives have been generally considered as indispensable.

There is no remedy whose good effects in this disease is so frequently mentioned, as *opium*. One of the latest writers who speaks particularly in favour of relying chiefly on this narcotic, is Dr. Morrison. During eight years of practice at Demerara, where tetanus is of frequent occurrence, he employed it in a number of cases, and he declares, that in more than a dozen instances, the cure could be fairly attributed to this remedy. Its good effects are, however, not to be procured from small doses. It must be given in very large and repeated portions.* Dr. Morrison generally commenced with one hundred drops of laudanum, and increased each succeeding dose by thirty drops every two hours until either sleep or sterterous breathing came on, when it was discontinued. The quantity of opium, which has been advantageously given in some instances is indeed enormous. In Dr. Barr's case, referred to above, "a drachm of solid opium was given at once," on the third day of the disease, and after eighty-two ounces of blood had been abstracted. "In twenty minutes the patient began to doze a little, but not to sleep. In about an hour he fell asleep, shortly after which the breathing became slow and very laborious. In two hours he was roused, when he felt nausea, which was succeeded by full vomiting, which produced much relief. One slight spasm only afterwards occurred." The bowels should always be well evacuated by active cathartics and injections, previous to resorting to the opium. In traumatic tetanus, at least, copious venesection and leeching along the spine, would appear to be an important preliminary or concomitant measure with the employment of opium. In most of the cases that have been reported in illustration of the good effects of copious bleeding, opium was freely administered.† The method of Stuitz,

* A Treatise on Tetanus with cases. Lond. 1815.

† Dr. Odeir of Geneva says, "the best means for ascertaining whether the disease is tetanus, in doubtful cases, is to exhibit opium in gradually increasing doses. If the disease is tetanus, it will require an exceedingly large dose before its narcotic effects are manifested. But in cases that simulate tetanus, as is sometimes the case with hysteria, this narcotic evinces its powers much more readily and energetically."—*Manuel de Médecine Practique*. p. 189.

which in some parts of Europe has gained much celebrity, consists in the alternate use of opium and large doses of carbonate of potash, together with warm alkaline baths.* Bouchet, surgeon of the Hotel Dieu at Lyons, gave one drachm of opium with three of the carbonate of potash in 24 hours with complete success in traumatic tetanus. In a recent number of Hufeland's Journal,† an instance of traumatic tetanus is related, in which this mode of treatment, with a copious blood-letting in the commencement, was used with the happiest effect. The method, however, no doubt, derives its powers, chiefly if not wholly, from the opium and warm-bathing.

Mercury, also, has been a good deal employed, and according to respectable authorities, with decided advantage in tetanus. Dr. Walther, in a memoir on the use of mercury in this affection, declares that from successful experience, he is led to regard this remedy as among the most valuable means we possess for the cure of tetanus. In the *Medical Essays* and Observations of a Society in Edinburgh, published a century ago, Dr. Donald Monro states, that a gentleman in Jamaica, had cured twelve cases of tetanus in succession "by placing his patients in a very warm room, and then rubbing in large quantities of mercurial ointment over the limbs and body until ptyalism was raised. This with *large doses of opium*, was the only means used. Dr. A. Monro of Edinburgh tried the same plan in a case of traumatic tetanus, and with complete success."‡ Larrey, however, states, that mercurial frictions during the French campaigns in Egypt, almost uniformly did harm. Dr. Rush cured a case in the Pennsylvania Hospital by copious salivation, assisted by bark and wine. It would appear from the observations that have been published on this point, that ptyalism is much more apt to do good in idiopathic, than in traumatic tetanus. Dr. Morrison states, that he met "with many examples of the beneficial effects of mercury in this disease, and as it does not interfere with other remedies, the free administration of mercury, he says, ought never to be omitted."

Wine and other alcoholic liquors, though apparently directly contra-indicated, have been much used, and successfully too, in tetanus. In conjunction with bark, mercury, and irritating applications to the wound, *wine* was a favourite remedy in this affection with Dr. Rush. "Wine," he says, "should be given in quarts and even gallons daily." Dr. Currie cured a case in the Liverpool infirmary; the patient having drunk, in a

* Stuitz ueber den Wundstarr Krampf. Hufeland's Journal, Bd. xviii. st. iv. p. 5.

† October, 1827.

‡ Med. Chir. Rev. vol. x. p. 304.

short time, "nearly a quarter cask of Madeira wine," and Dr. Hosack has published observations illustrative of the beneficial effects of this stimulant in tetanus.* In the London Medical and Physical Journal for March 1825, Dr. Nicholls has reported a case of incipient traumatic tetanus which was successfully treated by the administration of wine, laudanum, bark, and steel, with ammonia and nourishing diet.

Various other stimulants have been employed in tetanus. The *spirits* of *turpentine* in particular has of late years, attracted considerable attention as a remedy in this disease. Dr. Hutchinson gave it in a case of idiopathic tetanus, in an epileptic subject with complete success.† A similar case is related by Dr. William Tamis, which yielded to the internal administration of this article.‡ Dr. Mott of New-York, has given an account of a case of traumatic tetanus, which was cured by the spirits of turpentine after the disease had resisted the influence of the cold and warm bath, tobacco, opium, bark, wine and blisters to the spine. A tea-spoonful of the turpentine was given every fifteen minutes for two hours, when the spasms intermitted. It was afterwards repeated at longer intervals, until one hundred and twenty-three tea-spoonfuls were taken.§

Tobacco was recommended for the cure of this disease, by Dr. Edmund Gardener, as early as the beginning of the eighteenth century. It has lately been a good deal employed, and no inconsiderable number of instances have been published illustrative of its good effects. Dr. O'Beirne's case, related in the third volume of the Dublin Hospital Reports, is an interesting example of the occasional beneficial influence of tobacco in tetanus. Tobacco enemata (a scruple of tobacco to a pint of boiling water) were employed at longer or shorter intervals, for fifteen days in succession, and the disease was thereby completely overcome. Dr. Anderson, who practised at Trinidad, has reported three cases of traumatic and idiopathic tetanus, which yielded under the employment of the tobacco.‖ He directed the jaws, throat, and chest to be fomented for half an hour at a time by a strong decoction of fresh tobacco leaves. After the fomentations, cataplasms of tobacco were applied to the jaw and throat. The warm bath, into which some tobacco was thrown, was also used every three hours, and a tobacco enema administered every twelve hours. The trisums did not yield until the third day, when the jaws became a little relaxed, and under the same treatment the patients gradually recovered. Lefoulon, also, employed this powerful narcotie with success

* New-York Medical Reposit. vol iii. p 22.
† Lond. Med. and Phys. Jour. No. CCLXXXVIII.
‡ Ibid. for May, 1823.
§ New-York Med. and Phys. Jour. vol. ii. p. 388.
‖ Transact. of the Med. Chir. Society of Edinburgh, vol. i. and vol. ii.

in tetanus ;* and Dr. Norcom cured a case by the simultaneous employment of opium internally and tobacco glysters.†

The *prussic acid* would appear to possess very considerable remediate powers in this affection. Dr. Trezevant, of Columbia, South-Carolina, has given the history of a case, which strongly illustrates the beneficial tendency of this potent remedy in tetanus.‡ It appeared, also, highly useful in a case treated successfully by Professor Pattison, in which it was freely used, in conjunction with the application of caustics along the spine. Various other internal remedies have been given with more or less benefit in tetanus. Dr. Brown exhibited the tincture of *cantharides* in large doses with success; and Dr. Elliotson has published some observations, which go to show that considerable advantage may occasionally be derived from very large doses (℥ss.) of the subcarbonate of iron.§

The external employment of *cold water*, either by affusion or the plunging bath, is one of the oldest remedies employed in tetanus.‖ Dr. Wright was the first, in modern times, who directed the attention of the profession, particularly, to the employment of cold affusions in this affection.¶ His observations were soon followed by those of Cochran,** and Currie, who fully confirmed the favourable accounts he had given of its effects. Dr. Rush also obtained decided advantages from cold affusions in this disease. The only fortunate case I have ever witnessed, was treated by mercury, opium, and very frequent cold affusions. The *warm bath*, also, had been frequently employed in the treatment of tetanus. Richter observes, that the warm bath seldom fails to procure at least temporary mitigation of the symptoms. Dr. Morrison speaks favourably of the effects of warm bathing in tetanus; but the exertion, he says, which the patient must undergo, to get in and out of the bath, sometimes does more harm than can be counterbalanced by this measure. "Patients (he observes) are so alive to all external impressions, that the least exertion is often sufficient to excite violent spasms. On this account, the patient should be kept as quiet as possible, and very few questions asked, and every thing tending to excite mental exertion avoided." It must be observed, moreover, that according to the experience of some practitioners, much mischief has resulted from the use of the warm bath in tetanus, independent of the exertion which it re-

* Harles' Neue Jour. d. Med. Chir. Leter. B. vi. No. II.
† Philadelphia Journal of Med. and Phys. Sciences.
‡ Medical Recorder, vol. v. October, 1825.
§ Med. Chir. Trans. vol. xv. part i.
‖ Hippocrates, lib. iv. sect. v. aph. 2, et lib. v. sect. ii. aph. 21. Avincena: lib. iii. cap. 7.
¶ Lond. Med. Observ. and Inquir. vol. vi.
** Med. and Philosoph. Comment. vol. iii.

quires. Dr. Hillary states, that he has known instantaneous death to follow warm bathing in this disease. This, however, may be affirmed of perhaps every important remedy that has been administered in tetanus.

From what has been said above, concerning the pathology of tetanus, no remedies appear to be more clearly indicated than external irritating applications along the tract of the spine. This is, indeed, an old practice. Celsus lays particular stress on the assiduous employment of frictions and rubefacients over the vertebral column ;* and if these are insufficient, he advises the application of cups ; or, finally, the *actual cautery* over the vertebræ of the neck. Dr. William Carter, among modern writers, is, I believe, the first who employed blisters along the whole course of the spine in this affection. He has published a case which was successfully treated by blistering in this manner, with the occasional use of an active cathartic.† Several other cases are extant, illustrative of the good effects of this practice.

A much more powerful and prompt means of this kind is the *caustic potash.* Dr. Hartshorn of this city, was, I believe, the first who applied this caustic over the spine for the cure of this affection. He has reported a case which yielded completely under the employment of this application, together with the internal use of opium, æther, brandy, and extract of stramonium, in large doses. In this case the good effects of the caustic were unequivocal. The internal remedies, just mentioned, had been employed for several days without any advantage. The caustic was, at last, applied over the cervical vertebra, and in about two hours afterwards a diminution of all the tetanic symptoms had already taken place.‡ A case, equally satisfactory, in relation to this practice, is related by Dr. T. Thomas, of Easton, Maryland. After wine, mercurial frictions, and opium had been ineffectually employed, the caustic potash was applied over the course of the cervical vertebræ. "The effect," says Dr. T. "was really delightful ; the new action excited by the caustic destroyed completely the morbid action of the system ; the spasms ceased, and in one hour the patient appeared free from disease."§ Many other cases have since been published, demonstrating the beneficial effects of

* Fricatio cum omnibus vertebris, hominum utilis sit, tum iis præcipue, quæ in collo sunt. Ergo die nocteque, interpositis tamen quibusdam temporibus, hoc remedio utemdum est: dum intermittitur imponendum malagma aliquod ex calefacientibus. Si vero etiam vehementius dolor crevit, admovendæ, cervicibus cucurbituriæ sunt, sic ut cutis incidatur. Eadem aut ferramentis aut sinapi adurenda. Celcus. de Medicina. Lib. iv. cap. iii.

† Med. Transact. of the Lond. College of Physicians, &c. vol. ii. p. 34.

‡ Eclectic Repertory, vol. vii. p. 245.

§ Ibid.

this practice.* I have already referred to the recommendation of the actual cautery to the region of the cervical vertebræ, in this disease, by Celsus. In modern times, Mursinna has resorted to this measure, with almost instantaneous mitigation of the symptoms. Dr. M'Clellan also employed it in one instance with unequivocal benefit. The application of moxas, along the spine, might no doubt be used with advantage.

From all that has been said concerning the treatment of tetanus, it appears manifest, therefore, that copious bleeding, leeching, and cupping along the spinal region, mercury, large doses of opium, tobacco enemata, active purgatives, the free use of wine, and caustic applications over the cervical and dorsal vertebræ, constitute the most important curative means in this affection.

CHAPTER XI.

HYDROPHOBIA.

Hydrophobia is one of the most ancient diseases.† The first† distinct account, however, which was given of this terrific malady, is to be found in the writings of Cœlius Arelianus.‡ Celsus speaks of it as a disease well known before his time.

In the human species, hydrophobia has never, so far as is known, arisen from general causes. In man it is always the result of a specific virus or contagion derived from an animal labouring under the disease. The hydrophobic virus appears to be exclusively attached to the saliva: and hence almost the only mode in which it is propagated is by wounds inflicted with the teeth of a rabid animal. Without doubt, however, the dis-

* Dr. Worthington. (Medical Recorder, vol. iii. p. 527.) Dr. Joel Lewis, (Ibid. p. 176.) Professor Potter, of Baltimore.

† Among the ancient Egyptians, *rabies canina* appears to have been known, and ascribed to a disease of the spleen. Horapollo (Hieroglyphica, I. 39.) says, σπλῆνα δὲ, ἐπειδὴ τοῦτο τὸ ζῶον μόνον παρὰ τὰ ἕτερα ἐλαφρότερον ἔχει εἴτε (δὲ) θάνατος αὐτῷ, εἴτε μανία περιπέσοι, ἀπὸ τοῦ σπληνός γίνεται.—*Origines Contagii. Auctore Dr. C. F. H. Marx.*

Homer also in several places, refers to this disease. Thus Teucer calls Hector a mad dog:—

Τοῦτον δ' οὐ δύναμαι βαλλέειν κύνα λυσσητῆρα.—*Iliad*, lib. viii. v. 299.

At Argos there was anciently an annual festival, called *Cyrocephantes*, during which, all the dogs that were running at large were killed.—*Gorrey, Sur la Rage. Jour. de Médecine*, T. xiii. p. 93.

‡ De Morb. Acut. p. 206, edit. 1722, as quoted by Van Sweiten.

ease may be communicated by bringing the contagious virus in contact with an excoriated or wounded surface in any manner. This has indeed been verified by direct experiment. Magendie and Brechet inoculated two dogs with the saliva of a rabid man, One of these dogs became rabid, and bit two others, which also became mad. Instances have moreover been recorded of the propagation of hydrophobia by the accidental contact of the morbid saliva with wounds, or excoriations on the lips, hands, or other exposed parts of the body.*

In the dog, fox, and wolf, and in the domestic cat, and perhaps in some other animals, hydrophobia is sometimes developed by causes of a general character, independent of a contagious principle. By what particular influences the disease may be generated without the agency of a contagion, is however as yet, in a great degree, a matter of conjecture. It has been supposed that intense cold and high atmospheric temperature have a particular tendency to promote the development of this affection. Experience does not sustain this opinion sufficiently to entitle it to especial credit. It is indeed true, that in our own climate, canine rabies is, in general, of much more frequent occurrence during the hot months of summer, than in any other season of the year; yet in some extremely warm and cold countries, this disease is said to be entirely unknown, or at most, exceedingly uncommon.

In South America, Egypt,† Syria, the West Indies, Sweden, and Kamtschatka,‡ hydrophobia, we are told, has been rarely if ever known to occur. Its spontaneous occurrence has also been thought to be particularly favoured by certain occult atmospheric constitutions; and this opinion is countenanced by the fact that the disease has been known to occur at certain times and places in an epidemic manner.§ Besides these presumed occasional or predisposing causes of hydrophobia, it has been alleged that putrid food; the protracted want of food and drink; unsatisfied venereal passion;‖ and violent rage, are capable of originating this affection. Dr. Mease states that a number of dogs fed upon the carcases of horses that were left unburied near this city, and that many of them soon afterwards became affected with rabies. Rougemont relates similar examples of the apparent generation of this affection by putrid animal food. On the other hand, however, it has been observed, that the

* Callisen in Colect. Societ. Med. Havn. vol. i. ob. 32. Gruner's Almanach fuir Aerzte. 1786. p. 184. Salzb. Med. Chir. Zeitung, 1795, b. iii. p. 80.

† Le Cointre, Jour. de Med. tom. vi. p. 365, as quoted by Richter.

‡ Langsdorf's Reisen. B. ii. p. 443.

§ Fehr, Etwas Uiber d. Hundswuth. Mease on Hydrophobia.

‖ Hildenbrand, Eein Wink zur Naehern Kenntniss u. Heilung d. Hundswuth, p. 4.

dogs that crowd the streets of Constantinople feed almost exclusively on putrid animal substances, and yet hydrophobia is said to be almost wholly unknown at that place. "Putridity," says Dr. Good, "is perhaps the ordinary state in which dogs and cats obtain the offal, on which for the most part they feed: they show no disgust to it, and it offers a cause far too general for the purpose." With regard to the want of food and drink, as a cause of hydrophobia, Richter states, that in hot climates dogs have been known to perish for want of water, without having been seized with rabies. Direct experiments, too, have been made by confining dogs, both during very warm and cold seasons, and allowing them nothing but water without food, or salted and putrid meats, but no drink, without any of them becoming affected with this disease.*

It is nevertheless probable that these causes, though not of themselves capable of producing this disease, co-operate often with other influences in exciting its development. With regard to the tendency of violent rage to impart properties to the saliva of certain animals, capable of producing affections very similar, or as some assert, identical with hydrophobia, many confirmatory observations are extant. Lister mentions an instance of fatal hydrophobia produced by the bite of an enraged dog;† and similar cases are related by Dr. Parkinson, and Linguet.‡ The bite of an enraged cat, also, has been known to give rise to fatal rabies in the human species. Rossi gives an account of three cases of this kind.§ Weikard states that a woman, in separating two fighting fowls, was bit by one of them, from which she became affected with fatal hydrophobia;‖ and Le Cat mentions a similar event from the bite of an enraged duck.¶ The instances in which affections simulating hydrophobia have arisen from the bite of infuriated men are by no means very rare. Van Swieten mentions a case of this kind,** and other examples are related by Weikard, Meekreen, Wolff, and Zacutus Lusitanus, as cases of genuine rabies.

It is not improbable, however, that many of the reputed cases of hydrophobia said to have arisen from injuries of this kind, were in reality peculiar forms of tetanic affections; for the dread of water, which has been generally regarded as pathognomonic of rabies, has been frequently known to occur in cases unequivocally tetanic.

The contagion of rabies belongs to the palpable of fixed morbid animal passions, and does not admit of being diffused in the

* Ribbe. Natur u. Medic Geschicte der Hundswuth Krankheit.
† Tract. de Quibusd. Morb. Chronc. p. 43.
‡ Jour. Politique, No. 1775, quoted by Richter.
§ Turiner Med. Abhand. 1802.
‖ Philosoph. Arzt. s. iv. p. 186, quoted by Richter.
¶ Recueil Periodique, ii. p. 90.
** Commentaries, § 1130.

atmosphere—at least not in such a state as to retain its power of infecting. It would seem, however, to retain the power of affecting the system a very long time after it is generated. Cases are related in which the saliva of hydrophobic patients adhering to clothes, has given rise to the disease in persons who afterwards were employed to clean or mend them. Richter mentions the case of a woman who became affected with rabies in consequence of having mended a garment that was torn by the bite of a rabid dog.*

The period which intervenes between the insertion of the contagion of rabies and the commencement of the disease is exceedingly various. It very rarely appears before the end of the third week, and in some instances the contagion remains dormant for six, nine, or even twelve months before its effects are manifested. From forty to sixty days may be regarded as by far the most common latent period of this contagion. Dr. Dickson states, that of seventeen persons who were bitten by the same dog, ten became affected with the disease at different periods from the fifteenth to the sixty-eighth day after the infliction of the bites.† Instances indeed have been noticed, in which the disease came on as early as twenty-four hours after the bite of a rabid dog; and Boudot mentions a case which supervened during the first night.‡ It is exceedingly doubtful, however, whether these cases were truly hydrophobic. The alarm occasioned by the bite of a rabid dog, may of itself be sufficient to cause spasmodic and nervous symptoms, similating this disease, in persons of nervous temperaments. Authors moreover mention cases which did not supervene until several years after receiving the hydrophobic contagion; but the instances which are related as having occurred eighteen, *twenty*, and even *forty*§ years after the insertion of the virus, require an effort of faith which few, I presume, are willing to exercise. There however is a very remarkable and well authenticated case related, of a woman who had been bitten by a mad dog, and in whom the wounded part inflamed and broke open every spring for eighteen years in succession. In the spring of the nineteenth year, the part became red and painful, without opening, and the immediate consequence was furious mania, with an insurmountable horror of water. By the application of blisters to the affected part, blood-letting, and mercurial purgatives, she was cured.‖

Without doubt, however, the occurrence of this affection after the infliction of a bite from a rabid animal, may be promoted

* Specielle Therapie. Bd. viii. p. 378.
† Med. Observ. and Inquiries, vol. iii. art. 34.
‡ Essais Antihydrophobique, 1771, p. 121—Richter.
§ Rougemont, loc. cit. p. 123.
‖ Richter's Chirurg. Biblioth. b. v. p. 686.

by the alarm and mental anxiety which an accident of this kind always excites to a greater or less degree. It would appear also that violent anger, or vehement mental emotions of every kind, and from whatever cause they may arise, have no inconsiderable tendency to hasten the occurrence of this affection after its contagion has been introduced into the system. Observation would seem to show, too, that high atmospheric temperature has a similar tendency of promoting the activity of this contagion. It is said, that the disease almost invariably comes on much earlier in hot climates than in the temperate latitudes. Richter mentions the free use of spirituous drinks and inordinate venereal indulgences as causes capable of hastening the supervention of the disease. Several very striking examples illustrative of the influence of the latter cause, in this way, are mentioned by Rougemont. It is a fortunate circumstance that the bite of a rabid animal is by no means generally followed by hydrophobia. The predisposition to the morbific influence of this contagion does not appear to be very strong in the human species; and in many instances an entire insusceptibility seems to exist to its operation. It is from this cause, in part at least, that we sometimes find only one or two out of a number of individuals bitten by the same dog, become rabid. Without doubt, too, the circumstances attending the infliction of the bite, often have a particular agency in hastening, retarding, or preventing the occurrence of the disease. When the animal bites through clothes, more especially woollens, the virus is probably often so completely wiped from the teeth before they penetrate the skin, as to prevent infection.

It has already been observed, that in the human subject hydrophobia, or genuine rabies, appears to have but one origin; namely, the application of the hydrophobic contagion to a raw or excoriated surface. It has, nevertheless, been asserted, that unequivocal rabies has occurred in the human species without the agency of a specific virus; and Richter, as well as many other respectable authorities, are inclined to admit the possibility of such an occurrence. Mangor gives an account of an instance, where a melancholic man became affected with hydrophobia wholly unconnected with contagion, of which he died on the sixth day. His wife, who during the course of the disease frequently kissed him, also became affected with the disease, and died of it on the fifth day.

Symptomatic affections closely similating hydrophobia are not very uncommon. A dread of water—exciting spasms and feelings of indescribable horror when attempts are made to drink, has been frequently noticed as an accidental occurrence in various diseases. Inflammation of the brain, uterus, and particu-

* Act. Reg. Soc. Med. Hav. vol. ii. p. 408. Richter.

larly of the heart, and of the cardiac extremity of the stomach, are most apt to become complicated with hydrophobic symptoms. Nervous affections, more especially hysteria and hypochondriasis, may also assume the phenomena of rabies; and instances are mentioned, in which mania and epileptic paroxysms have terminated in symptoms of hydrophobia.* The narcotic poisons—particularly stramonium, belladonna, and aconitum, have been known to produce spurious hydrophobia;† and it has been the consequence of suppressed menstruation by violent mental emotions. (Richter.) Malignant and other violent forms of fever are sometimes attended in the advanced period of their course with many of the characteristic symptoms of rabies. Schmucker relates a case of dropsy in which the "water-dread," was for a time as strongly manifested as it usually is in genuine hydrophobia; and Frank saw an instance of its occurrence in diabetes.‡ In the last stage of pulmonary consumption, in hepatic obstructions, in jaundice, and in other chronic visceral affections, hydrophobic symptoms have been known to occur; and the occurrence of phenomena of this kind in tetanus is far from being uncommon.

Symptoms.—In nearly all instances of this affection, certain local and general premonitory symptoms occur for a longer or shorter period previous to the appearance of the characteristic phenomena of the disease. If the wound, by which the contagion was communicated be not yet fully closed, it assumes a more or less livid appearance, with raised and inflamed edges, and begins to discharge a thin ichorous matter a few days before the accession of the proper hydrophobic symptoms. Where cicatrization has been fully completed before the disease begins to develope itself, the cicatrix generally becomes slightly elevated, painful, inflamed, and finally, often opens, forming an ill-looking ulcer with elevated borders, from which a thin, acrid, and offensive matter is discharged. The pain in the affected part is often very severe; and sometimes gradually extends itself throughout the whole limb. It is said, that the pain in passing inwards from the part that was bitten always proceeds along the course of the nerves towards their origin. Sometimes, however, little or no inflammation and pain in the injured part is noticed before the accession of the disease, with the exception usually of an occasional transient stinging sensation in the cicatrix. In some instances the patient experiences a peculiar torpor and numbness of the injured extremity.

The *general* premonitory symptoms consist usually in lassitude, muscular prostration, indisposition to corporeal and

* Richter Specielle Therapie. B. viii. p. 197.
† Harles. Ueb. d. Behandl. d. Hundswuth, p. 72.
‡ Epitom. &c. lib. v. p. 1. p. 54.

mental exertion, flushes of heat alternating with transient sensations of chilliness, nausea, sometimes bilious vomiting, thirst, constipation, want of appetite, anxious respiration, and in general all the symptoms which usually precede the development of febrile diseases.* In some cases a constrictive sense of pain is felt in the extremities, passing generally from the wounded part, and finally fixing itself in the head. (Richter.) The sleep is commonly disturbed by alarming dreams, and attended with slight spasms of particular muscles, and twitching of the tendons. The temper is almost invariably prominently affected shortly before the invasion of the disease. The patient is unusually reserved, suspicious, taciturn, and tormented with gloomy forbodings; sometimes, though indeed seldom, he is animated and talkative. There is commonly an extreme degree of sensibility and repugnance to the impressions of cool air. In men, the desire for venery is often almost irresistible a short time before the disease comes on, and Hamilton states that the scrotum is usually very strongly, and as it were, spasmodically contracted.

These precursory symptoms sometimes continue for seven or eight days before the actual occurrence of the disease; but their ordinary duration varies from two to four or five days. Occasionally indeed, no premonitory symptoms whatever, are noticed before the accession of the disease.

The only symptom which is never wholly absent in this disease, as it affects the human species, is the extraordinary dread or horror of liquids—more especially of water. Patients labouring under rabies, may indeed sometimes experience a temporary abatement or even absence of this torturing symptom, but in all instances it occurs in a greater or less degree, and generally remains throughout the whole course of the malady. In general, the mere sight of liquids, or the sound of pouring water from one vessel into another, brings on violent suffocative spasms; and the attempt to swallow water, or to bring it to the lips, commonly excites a degree of horror and agitation truly frightful. Even the sight of polished surfaces, as of a mirror, or the rustling sound of bed curtains, of currents of air, or of running water, will, in the more violent grades of the disease, immediately renew the spasms and feeling of horror. Occasionally, however, this extraordinary horror is manifested only against *water;* for patients have been known to take small portions of other fluids, as of soups, milk, and wine in a lukewarm state. The thirst is always extremely urgent, and although the suffering from this source is generally very great, the patient dares not attempt to swallow any liquids. The secretion of saliva is profuse, and from an inability to swallow it, the pa-

* Richter, loc. cit. p. 129.

tient continually spits it out in every direction, "often desiring those around him to stand aside, as conscious that he might thereby injure them." During the whole course of the disease occasional remissions occur. Whilst these continue, the patient often appears calm, talks deliberately about his feelings or his affairs, and cautions those who are about him not to approach him too closely when under the paroxysm of madness, lest he should injure them. Notwithstanding this partial calm, there is always a peculiar wildness and appearance of alarm in the expression of the countenance; the motions are quick and hurried; the eyes cast about with an air of suspicion; and if the patient attempts to lie down and obtain some rest, he usually soon starts up again with great agitation and anguish of feeling. During the exacerbations, the expression of the countenance is wild, furious, agitated, and agonized; the eyes are blood-shot, sparkling, projecting, and expressive of rage and terror; the muscles of the face, throat, and chest, and sometimes of the extremities, are thrown into spasms; respiration is interrupted or convulsive; the arms are thrown about; the fists clenched; the teeth violently gnashed; the mouth foaming; with an unconquerable disposition to bite every thing that comes within the patient's reach. In violent paroxysms, furious and maniacal raving occurs, attended often with an entire absence of consciousness. These paroxysms usually last from about fifteen to thirty minutes. Many patients, however, do not become furious or maniacal during the spasmodic exacerbations, and retain almost the full command of their mental powers from the commencement to the fatal close of the malady. In some instances a tormenting degree of salacity is experienced during the intermissions, attended with continued painful erections and occasional involuntary discharges of semen. Patients affected with rabies, generally walk about through the room, or remain sitting up as long as their strength admits of this effort, for the horizontal posture is almost always borne with much difficulty.

Hydrophobia is very rarely attended by distinct febrile symptoms, except sometimes towards the conclusion of the disease. At first the pulse generally does not materially differ from its natural condition; but in the latter periods of the complaint it always becomes small, irregular, weak, and very frequent. The eyes are in general very sensible to light; and the countenance is pale during the remissions, but turgid and flushed during the paroxysms. Some patients are from time to time affected with vomiting, attended with a burning heat in the pit of the stomach. The morbid sensibility to the impressions of low temperature which occurs generally among the premonitory symptoms, often rises to an extreme degree during the course of the disease. Towards the termination of the

malady the tongue becomes rough, harsh, chopped, and often aphthous. The surface of the body is usually constricted and dry, the bowels constipated, and the blood drawn from a vein often dissolved and very fluid. (Richter.) The duration of hydrophobia is fortunately not long. Most patients die as early as the second or third day of the disease. It is rarely protracted beyond the fifth or sixth day; although instances have occurred, which did not terminate under fourteen or fifteen days.

Post-mortem appearances.—The morbid phenomena, detected by dissection, in those who die of hydrophobia, are extremely various in different cases, and throw but very little or no light on the true nature of this affection. It is said that the process of decomposition often commences very early after death, and proceeds with great rapidity.* The surface of the body is usually of livid redness, and the muscles, and particularly the tendons, are unusually rigid. Strong vascular congestion of the meninges and brain, with serous, or sero-sanguineous effusion between the membranes and into the ventricles, are among the most common phenomena. In some instances the brain has been found unusually firm and dry, (Morgagni;) in others extremely soft. The mucous membrane of the mouth and fauces, and particularly about the glottis, is usually inflamed and sometimes considerably tumefied or œdematous. In some instances, however, these parts did not exhibit any material deviations from their natural condition, (Morgagni, Vaughan;) in others, instead of inflammation, the mucous membrane of the mouth and fauces were of a rose-red colour, with a varicose dilatation of some of its blood-vessels.† The cervical ganglia have been found inflamed. The lungs are often greatly engorged with blood, and its mucous membrane irritated or inflamed. In some cases the mucous tissue of the stomach and bowels exhibits evident marks of previous inflammation; and the same phenomena are occasionally met with in one or more of the abdominal viscera. Metzler, Benedict, Gherardini, and Autenreith have found the nerves leading from the wounded part manifestly inflamed to a considerable extent of their course. It must be observed, however, that many instances have been reported in which scarcely any morbid appearances whatever were detected on post-mortem examination.

With regard to the proximate cause or pathology of hydrophobia, there is but very little, or nothing known of a satisfactory character. The very numerous opinions that have been expressed upon this subject, resolve themselves into; 1, those

*Sauvages—De la Rage. Morgagni—De Sedeb. et Caus. Morbor. lib. ii. art. xix.

† Krukenberg, as quoted by Richter.

which regard the *sanguiferous system* as the primary location of the disease, viewing it as essentially an inflammatory affection; and 2, those which place the essential irritation exclusively in the *nervous system*. The general sentiment, at present, is in favour of the latter doctrine; but there exists nothing beyond plausible conjecture and hypothesis with regard to the particular character of the nervous affection, or the portion of the nervous system chiefly implicated. Without entering into any discussions on this obscure subject, it may be observed, that although the essential phenomena of the disease point unequivocally to a morbid condition of the brain and nerves, we have equally conclusive evidence that the arterial system is in a state of morbid excitement; for without diseased vascular action, there could be no hydrophobic virus secreted. The opinion, however, that it is an inflammatory affection, is certainly not sustained by the symptoms of the disease. That local inflammation should sometimes occur during the progress of the malady, is indeed to be expected; but even this occurrence does not appear to be so common as has been asserted; for many of the reputed examples of local inflammation, were probably, merely instances of strong vascular injection or engorgement, with its occasional consequent serous effusion, produced either during the course of the disease, or in articulo mortis. Rabies is, I presume, essentially a *cerebral* affection. The peculiar dread of liquids, the paroxysms of fury, or mental agitation, spasms, and general feelings of anguish and alarm, without any manifest febrile symptoms, all indicate that the disease is essentially connected with, or dependent on a morbid excitement or condition of the brain, independently, it would seem, of diseased vascular action or phlogosis.

Treatment.—After all that has been said and done in relation to the nature and remediate treatment of rabies, there is, perhaps, no other affection which is so decidedly beyond the control of all the resources of our art as this appalling malady. That it is essentially an incurable disease, cannot indeed be affirmed; for, however unsuccessful the efforts of physicians may hitherto have been, there is certainly nothing in its characteristic phenomena, which should lead us to assert that it is necessarily fatal, or to abandon the hope that some mode of management or remedy may yet be discovered, capable of arresting its progress. Indeed, unless we discredit the authority or judgment of several physicians of good repute, we must admit, that instances of genuine hydrophobia have been successfully subdued by remediate treatment. Unfortunately, however, such favourable results have been so exceedingly rare, that they can scarcely sanction any expectations of advantage from remediate applications, after the disease has made its appearance.

Our reliance must, therefore, be entirely placed in the prompt and energetic employment of *prophylactic* measures; and for this purpose, *local applications* to the wound, with the view of preventing the absorption of the hydrophobic virus, are decidedly the most efficient remedies.

As soon as possible after the infliction of the bite, the wound and surrounding surface should be carefully washed with warm, or as Hunter recommends, cold water; and immediate efforts made to prevent the further passage of the virus into the system. If the bite be of a character, and in a part which admits of its entire excision, this, if speedily done, affords undoubtedly the most certain protection against the occurrence of the disease.

If the bite be on the hand, particularly when the teeth of the animal have penetrated deeply between the bones, it will be best to amputate; and this is especially proper if only the fingers are wounded. Some have preferred destroying the wounded part with the *actual cautery*, and there can be no doubt of the efficiency of this measure, if employed soon after the bite has been received. The free application of caustic potash may also be resorted to with success where the wound is superficial; but where it has penetrated deeply, it cannot supply the place of excision, or the actual cautery. In slight wounds the application of cupping-glasses, as is recommended by Dr. Barry for the purpose of arresting the effects of poisoned wounds, would, perhaps, in most cases, be sufficient to prevent the occurrence of rabies. Dr. Good, "strenuously recommends the immediate application of a tight ligature to the affected part a short distance above the wound, if its situation will admit of it."

Besides these local measures, *which alone deserve our confidence*, a vast variety of internal remedies have been recommended with the view of counteracting the hydrophobic virus. Of all other diseases, indeed, rabies has afforded the widest scope for empiricism and charlatanry. Innumerable remedies have, at different times, been lauded as infallible preventives of this affection; but sad experience has hitherto nullified all these pretended specifics.

The most celebrated of these remedies is *belladonna*. This article was first used by Mayerne. Münch asserts, that in 176 instances the occurrence of the disease was prevented by this medicine;* and we have the authority of Stark, Jahn, Buchholz,† Sauter,‡ and Hufeland,§ in favour of its prophylactic

* Dissert. de Belladonna Efficaci in Rabie Canina Remedio.
† Hufeland's Journal. Bd. v. p. 378.
‡ Ibid. Bd. vi. p. 679.
§ Ibid. Bd. xvi. p. 113.

powers against this affection. *Anagalis arvensis.* This is one of the oldest remedies for the prevention of rabies. Both Galen and Aetius recommend it for this purpose. It formed the basis of several celebrated nostrums, formerly vended in this country; and its powers have been particularly extolled by Ravenstein, Cartheuser,* Chabert, Ribbe, Stoeller, and other writers on this disease. *Lichen cinereus* constituted the principal ingredient in the *pulvis antilyssus* of Dampiere.†—The celebrated Mead asserts, that in more than one hundred instances, he prevented the disease by this remedy.

The water plantain (*alisma plantago*) has, of late years, attracted much attention as a prophylactic remedy in this affection. It was first employed in Russia; and many respectable names might be cited in favour of its powers in this respect. The powdered root or bulb is given in doses of from a scruple to a drachm once daily. The root, it is said, should be collected about the latter end of August. The *scutellaria lateriflora* is fresh in the recollection of every one as a highly boasted preventive of this malady. Like other articles of this kind, it has had its day; and there are probably now very few, if any, physicians who would place the least reliance on its powers—as it certainly does not appear to deserve any confidence whatever.‡ Boerhaave, Erpenbeck, Moneta, and others, speak highly in favour of the internal and external use of vinegar as a preventive in this affection. A table-spoonful of strong vinegar is to be given three or four times daily for several weeks. Much has also been said in praise of the internal use of cantharides as a protection against rabies. This remedy is mentioned by Rhazes: and among the moderns, Werlhof,§ Buchholz, and particularly Rust,‖ have spoken decidedly in its favour. Axter, a German surgeon of deserved celebrity, states, that he never knew the

* Fundamenta Materia Medica.

† Two drachms of this substance, with half an ounce of black pepper, was given every morning, for four days in succession, in a cup of warm milk; and the patient directed to use the warm bath daily for a month afterwards.

‡ Besides the vegetable substances mentioned in the text, the following have been employed, and especially recommended, for the prevention of rabies. *Rad. cynosbati,* (Van Swieten;) *Celtis australis; phytolacca decandra,* (Harles;) *celtis ambralis,* (Hufeland's Journal, Bd. xxxii.;) *valerian,* (Bouteille;) *nux vomica,* (Thebesius, Leidenfrost;) *faba St. Ignatii; datura stramonium,* (Mease, Cooper, Harles, Brera, Hanemann;) *tobacco,* (Barton's Med. and Phys. Jour. vol. ii. p. 122;) *lycopodium clavatum,* (Hildebrand;) *camphor,* (Schmucker;) gentiana pneumonanthe; hypericum dubium; thalictrum flavum; paris quadrifolia; cichorium intybus; genista tinctoria; ranunculus sceleratus; campanula patula, and glomerata; polypodium bistorta; mercurialis perennis, &c.

§ Opera Omnia. part iii. p. 699.

‖ Uiber d. durch den biss ein. hundes veranlaste Wasserscheu—in dessen Magazin. f. d. gesammte heilkunde, 1816. B. i. p. 97.

internal administration of cantharides to fail in preventing rabies. As principal surgeon of the general hospital at Vienna, he had frequent opportunities of treating cases of this kind, and his opinion, as Richter observes, is entitled to great weight, as it is founded on a long course of very extensive experience. He gives one grain of the powdered cantharides daily, in union with tartar emetic, for five or six days in succession, and keeps the wound open for six weeks, by vesicatories and powdered cantharides.*

No remedy has had more repute as a preventive of hydrophobia than *mercury*. Astruc, Sauvages, Van Swieten, De Haen, Tissot, Portal, and Werlhof, regarded this article as the most certain prophylactic we possess against rabies. Many examples, illustrative of its good effects, have been reported; but the instances in which salivation has failed to prevent the occurrence of the disease are, perhaps, no less numerous, and it is now generally regarded as entitled to but very little confidence in this respect.† Within the last few years, M. Coster, a French surgeon, has published some statements which would seem to show that chlorine has the power of decomposing and destroying the hydrophobic virus. Two table-spoonfuls of chloruret of lime are to be dissolved in half a pint of water, with which the bitten part must be frequently bathed. It is said to have proved successful when applied six hours after the bite was received.

Cold bathing or *affusion*, is recommended by Celsus and Cœlius Arelianus, as a powerful prophylactic means in this affection. Cases of its successful application are mentioned by Van Swieten, Sabatier, Andry, and others; and it can scarcely be doubted, that by its invigorating and alterative effects, it is, at least, a very proper auxiliary to whatever other measures may be employed to obviate the disease.

Besides the remedies already mentioned, a vast number of nostrums and mixtures have had a temporary reputation as prophylactics against rabies. These, however, have all passed into merited neglect; and at present, there is perhaps no article of this kind that is countenanced by any respectable member of the profession.

Most of the foregoing remedies have also been employed for the purpose of curing the disease after it has actually made its appearance. Stark asserts, that he cured two cases of hydrophobia by the exhibition of belladonna in large doses; and

* Richter's Specielle Therapie. B. viii. p. 278.

† The *carbonate of ammonia*, (Martinet, Darlue;) *musk*, (Dalby Nugent, Tissot, Gmelin;) *acetate of copper*, (Leib.;) *copper filings*, (Cothenius;) *phosphorus*, (Zinke;) *arsenic*, (Lond. Med. and Phys. Jour. 1789,) have all been recommended for their prophylactic powers in this affection.

Sauter relates several remarkable instances which yielded to the powers of this remedy.* He gave it in doses of from eight to twelve grains of the powdered root every forty-eight hours. Shallern also cured a case of completely developed rabies by the use of this narcotic.† A case is related in Hufeland's Journal, (B. 44) which was successfully treated by a combination of *anagalis*, *marum verum*, and *basilicum;* and the celebrated Vogel asserts, that he cured several well-marked cases with a decoction of the anagalis.‡ According to Martinet, the liquid caustic ammonia has arrested the disease in four instances. He gave sixty drops at first, and afterwards fifteen drops every two hours, with a few ounces of a strong decoction of cinchona every four hours.§ Rust states, that he succeeded in subduing the disease, in one instance, with large and repeated doses of *cantharides*;‖ and Axter prevented the full development of the disease after unequivocal symptoms of its attack had already made their appearance. The *meloe majalis* was used successfully by Kortum; and Selle employed them with decided benefit. The very free use of mercurial remedies—particularly in the form of frictions, in conjunction with baths and musk—is said to have been employed with success in some instances of rabies, (Callisen, Rougemont.) Dr. Munckly has related a case which yielded under the influence of a free mercurial salivation.¶ *Olive oil*, both externally and internally employed, is said to have removed this affection.

Both Celsus and Cœlius Arelianus recommended frictions with warm oil as an efficient remedy in rabies. Vater has adduced facts, illustrative of its curative powers in this affection,** and Shadwell, an English physician, has given an account of a case, which would appear to have yielded to the internal and external use of sweet oil.†† The *cold plunging-bath*, or copious affusions, is mentioned by Van Swieten, as having succeeded in arresting the progress of rabies;‡‡ and Morgagni refers to similar instances of success; although he himself saw an instance in which the patient died almost instantaneously, on being plunged into cold water. Dr. Arnell has related a case, in which pumping for two hours and a half on the patient, was decidedly beneficial.§§

* Hufeland's Journal. Bd. xi. p. 3.

† Bernstein's Neu. Beitraeg. B. ii. See also Hecker's Annal. d. gesammt. Med. Bd. ii. p. 90—quoted by Richter.

‡ Praelectiones.

§ Richter's Specielle Therapie. Bd. viii. p. 320.

‖ Salzb. Med. Zeit. 1811. No. 76.

¶ Med. Transact. vol. xi. art. xii.

** Programma de Ol. Olivar. efficacia contra morsum canis rabida—as quoted by Richter.

†† Mem. of the Med. Society of London, vol. iii.

‡‡ Commentaries, vol. iii. p. 576.

§§ Med. Recorder, 1824.

Copious blood-letting also, has been much insisted on as a remedy in hydrophobia, and there are not wanting well authenticated instances of its beneficial effects. Poupart asserts that prompt and very copious abstractions of blood, so as to induce complete syncope, has effectually arrested the disease;* and Dr. Hartley cured a case by taking away 120 ounces of blood in the course of a few days.† In one case, blood was drawn to the extent of producing syncope during each paroxysm of the rabies, with the happiest effect;‡ and Dr. Russel states that a vein was opened in a young woman affected with rabies, and suffered to bleed until she fell down in a state of syncope, with the effect of arresting the disease.§ Dr. Rush was a strenuous advocate for copious venesection in hydrophobia. We may also cite the cases reported by Burton, Grisley, Willoughby, and particularly the interesting instances related by Tymon,‖ Schoolbreed,¶ Wynne,** Goeden,†† as striking examples of the occasional good effects of decisive bleeding in this affection. In Dr. Tymon's case, blood was at once drawn until the pulse could be scarcely felt, and 100 drops of laudanum administered, with injections of 300 drops of laudanum every two hours. On the following day two grains of opium with four grains of calomel were administered every two hours and continued to the sixth day, when ptyalism with gradual subsidence of the disease occurred. In the case reported by Dr. Schoolbreed, about fifty ounces of blood was drawn from a large orifice at once. Syncope ensued, and the disease was for a time manifestly moderated. As the symptoms appeared to increase again, he was once more bled to fainting, which had the effect of completely subduing the *water dread*, and paroxysms of fury. Calomel and opium were given for some time, under the use of which the patient's health was re-established. Parry nevertheless considers these two cases as very equivocal instances of rabies; but the histories given of them leave us little or no room to doubt that they were genuine instances of hydrophobia. A number of cases have indeed been reported in which the most energetic depletion did not produce the slightest impression on the disease. Dupuytren, Magendie, Brechet,‡‡ Bellingen, Horn, Marshal, Olbers, Hufeland, Rust, and others, state that they have not derived the least advantage from this measure.

* Histoire de l'Academie de Sciences. Paris, 1699.
† Philosophical Transactions, 1738.
‡ Gentleman's Magazine, Sept. 1752.
§ Historical Magazine for 1792.
‖ Edin. Med. and Surg. Jour. 1813, p. 22.
¶ Ibid. Jan. 1813, p. 30.
** Med. and Phys. Journ. Nov. 1814.
†† Hufeland's Journal, Bd. xlii. p. 64.
‡‡ Orfila, Toxicology, &c.

In conclusion, it is proper to state, that among the prophylactic measures, a regulated regimen, gentle exercise, an attention to the regular action of the bowels, and particularly avoiding violent mental emotions, over-heating, violent exercise, as well as the influence of sudden atmospheric vicissitudes, and all kinds of stimulating drinks, are all important observances.

CHAPTER XI.

MENTAL DERANGEMENT.

Without stopping to inquire into the nature and laws of the human understanding, or into its mysterious connexion with the animal body, it will be enough for our purpose to observe, that all the perceptions of the mind, and consequently all the materials upon which alone it can exert and manifest its powers, are derived from impressions communicated to it through the medium of the body. It is here assumed, therefore, that without a morbid condition of those parts of the organization which receive and convey to the mind the elements of thought, and which thus constitute, as it were, the connecting link between intellect and the external world, insanity can have no existence.

Pathologists have endeavoured to ascertain the seat of the *primary irritation* of insanity; but the observations we have upon this point are as yet vague and unsatisfactory. Pinel maintains that the primary seat of mental derangement is located in the epigastric region, from which the morbid irritation is propagated to the common sensorium. This is an old doctrine. Aretæus† observes, "verum præcipuæ furoris et melancholiæ sedes viscera sunt;" and it is indeed extremely probable, that in some instances at least, the primary source of insanity consists in an irritation seated within the abdomen. The intimate sympathetic relation that subsists between the brain and the chylopoietic viscera, is well known. A derangement in the functions of the one, seldom fails to induce a corresponding disorder in the functions of the other. Sudden fear, or disappointment, or violent anger, dissipates in a moment the keenest appetite; and a disordered state of the digestive organs is no less apt to give rise to torpor of intellect, irresolution, despondency, and waywardness of temper.

* De Caus. et Sign. Morb. Diut. l. 1. c. 37.

In whatever part of the body the primary irritation may be located, it must however, always be communicated to the *brain*, the mental organ, before the intellectual faculties can be deranged; and the proximate cause of insanity may therefore be regarded, as consisting in morbid cerebral excitement, existing either as a sympathetic or an idiopathic affection. As the musician cannot draw melodious tones from an instrument that is defective, so the mind cannot produce harmonious and correct thought, when its organ, the brain, is in a state of morbid excitement; and, it matters not whether this morbid condition be the result of causes acting immediately on the brain, or of such as primarily affect other organs whose sympathetic relations are such as to throw the irritation upon the common sensorium.

What is the nature of the cerebral affection upon which the deranged action of the intellectual faculties immediately depends? According to Dr. Rush, it consists essentially in a morbid action of the blood-vessels of the brain; whilst others view it as simply a state of nervous or cerebral irritation, without any necessary connexion with diseased vascular excitement. That the capillary blood-vessels of the brain are in a state of morbid excitement in perhaps all instances of mental derangement, is, I think, extremely probable. Whether, however, this irregular vascular action in the brain constitutes the primary and essential condition of insanity, or whether it be only one of the consequences of the primary cerebral irritation, may admit of some doubt. No nervous irritation can be long maintained without inducing diseased action in the blood-vessels. From the very cogent arguments of Dr. Rush, as well as from my own observations, I am nevertheless well convinced, that insanity consists essentially in a *local fever of the brain;* that is, in a morbid condition of this organ, in which both its medullary and vascular structures are in a state of diseased action.

Causes.—The *predisposition* to insanity, is, in many instances, very evidently dependent on an *hereditary* peculiarity of organization. Dr. Rush mentions several very striking examples of this kind.* Esquirol asserts, that according to his own observations, on half of the cases of insanity among the wealthy, and at least one-sixth of those which occur among the poor, depend on an hereditary predisposition;† and according to a tabular statement given by Dr. Casper,‡ it appears that in the different hospitals at Paris, the proportion of cases depending

* On the Diseases of the Mind, second edition, p. 48.

† Dict. Des. Sciences Medic. Art. Folie.

‡ Characteristic der Franzoesischen Medicine. Von. J. L. Casper, page 380.

on an hereditary predisposition, is to the whole number as about 1 to 4½. Esquirol states that he has met with an instance of seven sisters and brothers out of one family having been affected with insanity;* and Haslam mentions ten families in each of which several cases of mental derangement occurred.† Dr. Rush observes, that the following, among other peculiarities attend this disease, where the predisposition to it is hereditary; 1, weaker exciting causes develope the disease than where the predisposition to it has been acquired; 2, it is apt to come on about the ame period of life at which it appeared in the patient's ancestors; 3, children born *previous*, are less apt to become insane, than such as are born *after* the occurrence of mania in their parents; 4, in some instances of families in which madness has existed, the disease passes by the understanding in their posterity and appears in great strength and excentricity of memory and of the passions, or in great perversion of their moral faculties."

The liability to mental derangement is greatest between the twentieth and fortieth years of age; and according to the observations of Esquirol, still more particularly between the ages of twenty-five and thirty. The following tabular summary in relation to this point, drawn up by Dr. Casper from the observations of Pinel, Esquirol, Haslam, and others,‡ shows that from the thirtieth to the fortieth year of age, the occurrence of insanity is decidedly more common than during any other equal period of life. During childhood, or before the age of puberty, mania occurs very rarely. Instances are nevertheless mentioned, in which insanity appeared at a very early period of life. Dr. Rush saw two cases in children only two years old; in one instance it appeared during the seventh, and in another during the eleventh year of age. Haslam also relates an instance which occurred in a girl only four years old; in an-

* Loc. Citat.

† Observations on Madness and Melancholy, p. 231.

‡

	Age.						
	15 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80
Pinel, in the Bicetre from 1784—94 (males) admitted,	65	339	380	236	130	51	0
Esquirol in Salpetriére from 1811—14 (females) admitted,	171	135	403	205	115	66	23
Haslam, Bethlehem hospital, from 1784—94 admitted,	113	488	527	362	143	131	0
Esquirol's private institution, 1811—14 (wealthy patients,)	0	150	78	30	46	15	8
Hospital of Retreat at York, 1796—1811 (quakers,)	8	44	28	28	27	9	4
	357	1156	1416	861	661	172	35

other instance the disease came on in the seventh, and in a third one about the tenth year of age.

Old age, also, is almost equally unfavourable to the occurrence of mania. Dr. Rush states that he has met with but four instances in which the disease came on after the sixtieth year of age. It has moreover been observed, that maniacs rarely live to a very protracted age. Dr. Casper, however, mentions a very remarkable exception to this general fact. A coloured woman, he says, who had laboured under mental derangement for upwards of eighty years, was brought into the Hospital Salpetriére in a state of raving insanity, at the very advanced age of *one hundred and seventeen years.**

In relation to the relative frequency of insanity in the two sexes, it is pretty generally admitted that it is more common in females than in males. Haslam gives a statement from which it appears, that during a period of forty-six years, there were 4832 female, and only 4042 male lunatics admitted into the Bethlehem Hospital in London. It appears, however, from the inquiries of Dr. Casper, that the proportion of female over male lunatics, is much greater in France than in England.

It is worthy of notice that the predisposition to mental derangement is very generally connected with black or dark brown hair and a dark complexion. Esquirol states that out of two hundred and twenty-seven females affected with mania, one hundred and fifty-two had dark, thirty-nine fair, and thirty-six gray hair. Dr. Rush informs us, that of nearly seventy patients in the Pennsylvania Hospital, who were examined with a reference to this fact, in the year 1810, "all except one had dark-coloured hair." In some regions mental diseases are manifestly *endemic.* This is the case with the *cretins* in many of the gorges of the mountainous districts of Europe: and it would appear that this disease is found only where the soil is *calcareous.*†

The exciting causes of mental derangement are usually divided into the *moral* and *physical*—or into those which affect the animal organization through the medium of the mind, and those which act directly upon the body. Of the former kind are—intense mental application to one subject; violent rage; jealousy; excessive joy; sorrow; hatred; terror; surprise; fanaticism; unrestrained imagination; disappointed love, ambition, or vanity; mortified pride; chagrin; protracted mental depression; and religious enthusiasm. From the following table it would appear that grief, distress, want, and disappointed love, are decidedly the most common exciting causes

* Med. Chir. Rev. Sept. 1820. p. 25.
† Ibid.

of insanity.* Mr. Pinel observes, that a frequent and powerful source of insanity is the struggle between the principles of religion, morality, and education on the one hand, and the urgent influence of the natural propensities and the passions on the other.

Among the causes that act directly on the body, the following are the principal: Inanition from excessive hæmorrhage or defect of food; intoxication; suppressed habitual discharges, particularly the catamenial; onanism; inordinate venereal indulgence; restrained or unsatisfied venereal passion; worms in the alimentary canal; blows or falls on the head; apoplexy,

* *Physical Causes.*	Salpêtrière, in the years 1811-12.	Esquirol's private hos. 1811-12.	Bicêtre, 1803-13.
Hereditary,	105	150	
Pregnancy,	11	4	
Epilepsy,	11	2	118
Suppressed Menstruation,	55	19	
Puerperal State,	52	21	
Old Age,	60	4	36
Coup du soleil,	12	4	
Injuries of the Head,	14	4	
Congenital,			69
Fever,	13	12	157
Apoplexy,	60	10	
Malformation of the Skull,			9
Fire and other injurious Substances,			27
Syphilis,	8	1	
Imprudent use of Mercury,	14	18	
Onanism,			21
Intoxication,			106
Worms,	24	4	
Suppressed Cutaneous Diseases,			6
Suppressed Hæmorrhoids,			
Moral Causes.			
Grief,	105	31	99
Unfortunate Love,	46	25	37
Fanaticism,	8	1	55
Fright,	38	8	
Jealousy,	18	14	
Anger,	16		
Distress and Want,	77	14	116
Mortified Pride,	1	16	
Disappointed Ambition,		12	78
Intense and Protracted Study,		13	49
Misanthropy,		2	
Vives Révolutions d'esprit,			58
(*a*) Political Causes,	14	31	

(*a*) Casper, loc. cit. p. 380.

epilepsy; repercussion of chronic cutaneous eruptions; pregnancy; parturition; the puerperal state; syphilis; intense pain; very low and high atmospheric temperature; the inordinate or improper use of mercury; various narcotic poisons; atmospheric influences; gastro-intestinal irritation; the healing up of old ulcers; and various forms of acute diseases.

From the table given above, it appears that verminous irritation is no uncommon cause of insanity. Dr. Casper informs us that Esquirol stated in his lectures, that he had known eleven persons cured of mania after the expulsion of a large number of lumbrici by the use of anthelmintics. Mania appears indeed often unequivocally connected with intestinal irritation. The observations of Dr. E. Percival and Dr. Prichard, on what the latter terms *enteric* mania, may be consulted with much advantage. In these cases the morbid condition of the alimentary canal is generally decidedly marked. The gastric, biliary, and intestinal secretions are depraved; the bowels are loaded, tumid, flatulent, and much constipated; sharp and transient pains are felt in the abdomen; the tongue, fauces, and velum pendulum, become red, injected, and tender; the appetite is irregular, or there is much aversion to all kinds of food. The puerperal state too is a frequent exciting cause of mental derangement. According to Haslam, eighty-four out of sixteen hundred and sixty-four maniacal patients admitted into Bethlehem Hospital, came on soon after parturition. The proportion of cases from this cause, in relation to the whole number of admissions into the hospitals in Paris, has been estimated at about 1 to 13.

Esquirol observes, that moral influences are generally more concerned in the production of puerperal mania, than the physiological changes that are effected in the system by child-bearing.* The despair and heart-rending grief which seduction, loss of reputation, and abandonment inflicts upon some; the blighted hopes of success in life, and the consequent anticipations of poverty and want; the faithless and unkind conduct of the cherished father; these, and a number of other similar moral influences, frequently act in co-operation with the debility, exhaustion, and general physiological condition present in the puerperal state, in the development of mental derangement. Out of ninety-two cases of puerperal mania admitted into the Hospital Salpétrière during a period of four years, thiry-seven became affected with the disease between the first and fourteenth days after parturition; seventeen, between the fifteenth and sixtieth days; nineteen, between the sixty-first day and the eleventh month after confinement, and during lactation, and nineteen immediately after ceasing to suckle. (Casper.)

* Journal de Medicine, par Sedillot, Tom. 61.

Atmospheric influences also have a manifest agency in the causation of insanity. It appears that summer and spring are decidedly most favourable to the occurrence of mental diseases. Casper asserts, that the admissions into Esquirol's private institution, during the six months from March to September, amounted to double the number that were admitted during the remainder of the year; and by the following statement of the admissions into the Hospital Salpétrière, for each month, during eight years, we perceive this fact sufficiently illustrated.* It appears, therefore, that high atmospheric heat is more favourable to the occurrence of mania than cold weather.

Prostitution and its train of evils, syphilis, intoxication, and mercury, appear to be a very common source of insanity in populous cities,—and according to Esquirol, particularly so in Paris. It is asserted, that a twentieth part of the insane females admitted into the Salpétrière are previously prostitutes. It is stated by Casper, that mental derangement from intoxication is found by the records of the Parisan hospitals to bear a proportion to the whole number of admissions, as 1 to 23 with females; and 1 to 10 with males. In England, the proportion of lunatics from this cause appears to be greater. It has been estimated to amount to about one-fifth of all the cases that occur, (Casper.) Dr. Rush states, that at one time the number of maniacs in the Pennsylvania Hospital, in whom the disease was excited by the excessive use of ardent spirits, amounted to one-third of the whole number!

Onanism, says Dr. Rush, is much more frequently the cause of insanity in young persons than is generally suspected.† According to the foregoing etiological table, it would appear that in Paris, insanity from this cause occurs in the proportion of one out of fifty-eight in women of the lower order of society; and one out of fifty-one in males of the same class. In the higher classes it occurs in both sexes in the ratio of about one to twenty-three.

Sudden suppression of the cutaneous transpiration often gives rise to mental derangement. Esquirol mentions the case of a man who was subject to copious sweating about the head. He became insane in consequence of having washed himself with cold water, with the view of restraining the profuse perspiration. "A young man waded across a rivulet while freely perspiring. He had a rigour on going to bed, and immediately afterwards became maniacal."

* Admissions of lunatics in the Hospital Salpetrière from 1806 to 1814. January 162, February 173, March 187, April 196, May 243, June 251, July 265; August 239, September 206, October 197, November 198, and December 191.

† "La masturbation, ce fleau de l'espece humaine, est plus souvent, qu'on pense, cause de folie, sourtout chez le riches." Esquirol Dic. des Scien. Med. Art. Folie.

Mental derangement, from repelled cutaneous affections, is by no means uncommon. Some very striking instances of this kind are related by Dr. Casper. He saw in one of the hospitals in Paris, a maniacal female of a plethoric habit, in whom the healing up of an old fistulous ulcer, on the left arm, excited the disease. A blister was laid upon the arm, which caused violent phlegmonous erysipelas over the whole extremity and the re-opening of the ulcer. The patient was almost immediately relieved of her mental disease. In a short time, however, the ulcer cicatrized again, and the mania returned. He mentions another instance of mania, which came on immediately after healing an old ulcer on the leg. The ulcer was re-opened by local applications, and the mental affection disappeared. A young physician became affected with erysipelas: the inflammation subsided, and was substituted by mania. After a long time he suffered a second attack of erysipelas, and the mania disappeared.

Mania sometimes occurs in connexion with consumption. There is, at this time, a young lady under my care, who has, for the last nine months, been in a state of complete insanity from this cause. About a year ago, phthisis pulmonalis developed itself in her system. Three months after unequivocal symptoms of the pulmonary affection had come on, she became taciturn, morose, and finally maniacal. The consumptive symptoms continue, but she does not appear to be conscious of any disease of this kind. She coughs much, expectorates but little, has irregular hectic exacerbations, and night sweats. Haslam, indeed, denies that such a complication has ever occurred; and maintains, that cases of this kind are to be regarded as co-existing or concomitant diseases, without any mutual dependence between them.* The occurrence of insanity, as a consequence of pulmonary phthisis, is, however, well established. Dr. Casper saw an instance of this kind, in the Hospital Salpétrière. When the cough and hectic symptoms were present, the patient was entirely free from derangement of mind; but in the absence of the phthisical symptoms, the patient was furiously insane.

Sudden reverses of fortune is one of the most frequent causes of melancholy. Out of 482 melancholic patients admitted into the Hospital Salpétrière in the course of four years, forty-eight cases arose from this cause. It is generally believed that the moon has a decided influence upon maniacal subjects—an opinion which I do not doubt is founded on correct observation. Esquirol, however, entertains a different opinion. He observes, indeed, that the insane are generally much more agitated and boisterous about the full moon; but the same thing, he says, occurs about the break of day every morning. He thinks that *light* is the cause of this increased excitement of the maniacal symptoms at both periods. Light, he says, agitates all lunatics.

* Loc. cit. Second edition, p. 591.

Prognosis.—The degree of sanability of maniacal cases has of late years been an object of very particular inquiry; and the various reports that have been published on this head, show that the number of instances in which a cure is effected is by no means inconsiderable. From the following tabular statement, drawn up by Dr. Casper from official reports, it appears as a general result, that in France 0.44 $\frac{9}{11}$ of maniacal patients are cured; whilst in England the proportion is not so great, being only 0.37 $\frac{2}{5}$ of the whole number.

FRANCE.	Period.	Number treated.	Cured.	Died.	Remain.	Discha'd partially relieved.	Discha'd	Decimal proportion of cured.
Hosp. Salpetrière								
Pinel,	1801–1805	1002	473	250	270			0.47 1-5
Esquirol,	1806	333	160	33	140			.48
the same,	1807	289	136	70	83			.47 1-18
Pinel,	1812–1814	891	413					.46 1-5
Hospital Bicetre,—								
Chamseru,	1807	102	33					.32 1-3
Hospital Charenton,								
Pinel,	1789–1800	97	33					.34
Foderé,	1803	499	161					.32 1-4
Royer,—Collard,	1806	355	134	36	142		5	.36 2-3
Chamseru,	$\frac{1}{2}$ of 1807	214	91					.42 1-2
Esquirol's priv. Ins.	1801–1813	335	173					.51 7-11
Dubuisson's,		300	177					.59
Sum for France,		4427	1984					0.44 9-11
ENGLAND.								
Bethlem, according to Haslam,	1748–1794	8874	2557					.28 7-9
Haslam, (dif. acct.)	1784–1794	1664	574					.34 1-2
St. Luke's, Tuke,	1751–1819	12173	5091	1013	166		5903	.41 5-6
Hospital at York, Foderé,	1777–1807	1739	746	192	141	410	250	.42 7-8
Retreat at York, Tuke,	1796–1811	149	49	26	47	18	9	.32 4-5
Hosp. at Manchester, Foderé,	1766–1805	1686	667	190	85	220	324	.39 1-2
Hosp. at Montrose, Act of Parl.	1805–1815	154	34	36	54	25	5	.22 1-13
Hosp. at Nottingham, Burrows,	1812–1819	336	179	39	48		70	.53 1-4
Hospital at Exeter, Burrows,	1801–1819	626	355	53	45		173	.56 5-7
Hospital at Glasgow, Burrows,	1819	183	39	10	106		28	.21 1-3
Hosp. at Manchester, Burrows,	1820	350	74	31	190	2	71	.21 1-7
Bethlem, Act of Parliament,	1800–1815	4810	1839					.39 1-4
Sum for England,		32744	12254					0.372-5

From this statement it would appear, as a general result, that in France 0.44 $\frac{9}{11}$ of maniacal patients are cured. In England the proportion is not so great, being only 0.37$\frac{2}{3}$.

In looking over the foregoing table, we observe that the annual number of cures effected in the Hospital Charenton is pretty uniform during a period of fourteen years. At Bethlehem, on the contrary, we perceive that the difference in the proportion of cures effected, in the forty-six years from 1748 to 1794, and the fifteen years from 1800 to 1815, is eleven per cent. in favour of the latter period—a strong evidence, says Dr. Casper, that in England the treatment of mental diseases, has, within the last twenty-five years, received great improvements.

From the following summary of the cures effected by Esquirol in the Salpétrière, we perceive that the chances of recovery decreased very rapidly after the second year; and that after thefourth year, not more than one out of about 225 were cured.

There were treated in the years

	1804	1805	1806	1807	1808	1809	1810	1811	1812	1813	
Total number.	209	212	206	204	188	209	190	163	208	216	*total*
Of which were cured during the											
1st year,	64	73	78	60	64	48	48	44	75	50	604
2d,	47	54	49	55	57	64	51	30	41	49	493
3d,	7	4	10	11	4	9	7	8	11		71
4th,	4	2	3	1	2	4	1	3			20
5th,	3	2	1		1	1	3				11
6th,	2	1	1	2		3					9
7th,			1		1						3
8th,	1										1
9th,	1										1
10th,											
11th,		1									1
	129	317	143	129	130	129	110	85	127	99	1218

Veitch, in his report in 1816, states, that of twenty-eight cases of recent insanity, admitted into his private institution, he cured eighteen, but of one hundred and twenty-five inveterate cases he succeeded only in five instances. In the Retreat at York, England, out of sixty-six patients cured of insanity, twenty-seven were effected during the first year, thirteen in the second, three in the third, one in the fourth, five in the fifth, three in the seventh, two in the ninth, one in the thirteenth, and one in the fifteenth, (Casper.) Pinel observes, that after three years' ineffectual treatment, the chance of cure in insanity will be about as one to thirty.

Unfortunately, *relapses* are very common in mental diseases. In the Hospital Salpétrière, relapses, according to the observa-

tions of Esquirol, have occurred in the proportion of about one in ten.* This agrees pretty well with the facts stated by other writers, on this point. Relapses are most apt to occur during the spring and summer months, and particularly at those seasons in which the disease made its attack in the first instance. (Esquirol.) Dr. Hallaran observes, that when a violent fit of mania subsides rapidly, it is particularly apt to return. If the patient, soon after recovery from an attack of mania, becomes corpulent, there is not, in general, much probability of a relapse.†

According to the observations of Esquirol and Georget, the mortality is greatest during the autumn and winter. Of seven hundred and ninety insane females that died during ten years, (1804–14) in the Hospital Salpétrière, one hundred and seventy-five died in the months of March, April, and May; one hundred and seventy-four in June, July, and August: in September, October, and November, the number of deaths amounted to two hundred and thirty-four, and in the three remaining winter months, to two hundred and seventy.

With regard to age, it appears from the same observations, that the greater number of deaths take place between the ages of forty and fifty in males, and between thirty and forty in females.

Maniacal patients appear to be much less obnoxious to contagious and epidemic diseases than individuals who are of a sound mind. This fact has been particularly noticed by Rush, Dubuisson, Mead, Willis, Reil, and Cox.

Mania sometimes terminates spontaneously, in consequence, apparently, of some critical evacuation. Dubuisson saw it cured by the supervention of dysentery; Esquirol by epistaxis; Pinel and Hallaran through spontaneous salivation; and instances are mentioned, of the subsidence of mental derangement soon after the occurrence of profuse discharges of urine or tears, and, according to Buffon, of the semen.

In general, the difficulty of curing monomania and melancholy, is greater than of the other forms of mental derangement. Haslam observes, that when melancholly alternates with raving madness, the chance of a cure is extremely small; and when monomania or melancholy is converted into madness, almost every hope of a fortunate issue may be abandoned.

Casper states, that Esquirol in his lectures observes, that when maniacs are able to recollect recent occurrences, with an oblivion of events long passed, the prognosis is much better than when they have a recollection of remote occurrences, without being able to remember what has recently trans-

* Casper, l. cit. p. 405.
† Haslam, l. cit. p. 79.

pired about them. Mania, connected with paralysis or epilepsy, may be regarded as absolutely hopeless; and, in general, acute and furious mania is much more under the control of remediate management than low, torpid, and fatuous insanity. Mental derangement, from physical causes, in general, yields more readily and permanently than when it arises from moral causes. A recovery of the general health of the system, without a corresponding melioration of the mental disease, is said to be an unfavourable sign. Puerperal mania appears to be more frequently treated with success than any other form of mental derangement.

Post-mortem phenomena.—Notwithstanding the zeal and industry with which post-mortem examinations have been pursued in relation to mental diseases, we have as yet derived but very little information from such researches concerning the nature and seat of insanity. Esquirol assured Dr. Casper that he had dissected the brains of more than twelve hundred subjects who had died of mania, and that he did not in a single instance discover any morbid appearances which are not found also in subjects who had never suffered any mental diseases whatever. In almost every instance, however, he found the two hemispheres of the cranium of unequal size—and this, he says, "is the most constant phenomena, and perhaps the most worthy of attention."*

Haslam, Reil, Esquirol, and others, state that in the majority of cases, the brain is found preternaturally soft. Esquirol found the brain very soft in twenty-nine instances out of forty-four subjects; in fifteen it was of a firm consistence. According to Georget, however, softening of the brain is much more frequent than would appear from Esquirol's statement. Ossification of the *dura-mater*, is, according to the observations of Esquirol, no uncommon occurrence in maniacal subjects. He observes, moreover, that he invariably found a very firm adhesion of the lining membrane of the lateral ventricles to the adjoining substance of the brain. In several instances, Georget found the cerebellum totally disorganized. (Casper.)

Among the abnormal circumstances discovered in the thorax and abdomen, Esquirol mentions one in relation to the *position of the transverse colon*, which is of a very remarkable character. This portion of the intestinal tube, he says, is sometimes found sunk down so low as to pass into the pelvis, and so as frequently to be placed in a perpendicular instead of a transverse position. The phenomenon occurs most commonly in persons who labour under melancholia. It must be observed, however, that Mr. Lawrence asserts that instead of having found this position of the colon in those who had laboured under insanity

* Dict. des Sciences Med. Art. Idiotism.

he has seen it only in such as had never been affected by any mental diseases whatever. We perceive from these contradictory observations, how little reliance is, in general, to be placed on the sweeping inferences which are so frequently drawn from post-mortem appearances, in relation to the proximate cause and essential location of diseases.

The diseases of the mind may be divided into four classes: viz. mania, monomania, dementia, and idiotism.

I. *Mania.*

General mental derangement is characterized by a rapid succession of incoherent ideas and violent excitement of the passions, expressed by great agitation, loud vociferation, singing, menaces, and fury.

Mania is generally preceded by a marked change in the habits, tastes, attachments, and passions of the patient. He is usually animated, his sensibilities are keen, his ideas rapid, his temper irritable, jealous, and wayward. He is eccentric in his conversation and conduct; often betrays an unusually vicious disposition; he sleeps but little; is harassed by frightful dreams; forms various and extravagant plans for the increase of his fortune, or the good of the public; enters into ruinous speculations, or squanders away his means in childish or extravagant amusements, or in the purchase of unnecessary or useless articles of furniture, clothing, &c. Costiveness, a craving appetite, vertigo, cephalalgia, a sense of throbbing and tension in the head, and a dull and wild expression of the eyes, are among the common premonitory symptoms of mania. When the disease is once completely developed, the expression of the countenance is wild and often ferocious; the eyes are prominent, sparkling, and in constant motion; the patient sings, whistles, vociferates, halloos, walks to and fro with rapidity, "or stands still with his hands and eyes often raised towards the heavens;" he does not sleep for many nights, sometimes not for weeks; he often manifests great muscular power; the skin is dry, cool, and occasionally covered with profuse perspiration; the sensorial organs are extremely excitable; the appetite is sometimes craving, at others wholly absent; the bowels constipated, and the urine small in quantity and high-coloured. The pulse is variable—sometimes full and strong, at others small, irregular, and tense, or slow and intermitting, and occasionally morbidly natural. (Rush.) Perhaps the most constant and remarkable among the physical phenomena of mania, is continued watchfulness, and a *very peculiarly disagreeable odour*, which exhales from the patient's body and excre-

tions, and impregnates his clothes and bedding. (Esquirol.)* Some patients are tortured with a constant severe internal heat; and the majority experience *pain* in the head, or in some part or organ in the abdomen or thorax.

In the violent grades of mania, the mind forms erroneous perceptions of the impressions of external objects on the senses, or the senses convey erroneous impressions to the mind. In this case the patient does not recognize the objects and persons around him; mistakes "friends for strangers, and common visitors for his relations," loses the consciousness of his individuality, and "is ignorant of the place he occupies, of his rank and condition in society, and of the lapse of time." The imagination is sometimes so powerfully excited, that its representations prevail over those of the senses. The patient hears voices, holds conversations with persons, who he imagines are present, and in some cases these *voices* pursue and harass him wherever he goes, by day and by night, in public and in private. (Esquirol.) Sometimes the empire of volition seems to be entirely suspended, and the patient is no longer master of his own determinations. An irresistible impulse leads him to injure himself, or to inflict injury on others, to tear the clothes from his body, run out naked into the streets, leap out of windows, and to commit various other acts of fury. The sense of modesty and delicacy is generally wholly obliterated, and "people of the finest previous feelings will deliver themselves up to the most indecent or culpable actions without the consciousness of impropriety."

Mania may be continued, intermittent, or remittent. A single paroxysm may continue from a few days to several months, before it terminates in a remission, intermission, or in death. Some patients experience paroxysms of maniacal excitement at regular intervals of a day, a week, or months—the intervals being passed in a state of quiet and inoffensive insanity.† Mania may also assume a chronic form, with little or no distinct exacerbations. This constitutes what Dr. Rush has called manalgia. It is usually characterized by "taciturnity, downcast looks, a total neglect of dress and person, long nails and beard, dishevelled or matted hair, indifference to all surrounding objects, and insensibility to heat and cold."

* This peculiar smell issuing from the bodies of maniacal patients is also particularly noticed by Wagnor, Simes, and Reil.—*Reil, Fieberlehre*, B. iv. p. 348.

† These remissions, says Esquirol, sometimes offer very remarkable anomalies. A patient will, for instance, remain in a state of profound melancholy for three months, the three following months will be passed in a state of high maniacal excitement, and to this three months of complete fatuity will succeed.

II. *Monomania.*

Monomania consists in a state of *partial* insanity—the patient being insane upon some one subject only, with a full and regular use of his intellectual faculties "upon all, or nearly all other subjects." This class of mental diseases comprehends many varieties, as nostalgia, fanaticism, hypochondriasis, melancholia, misanthropy, satyriasis, &c.

This is by far the most common form of mental derangement, and is always entirely free from delirium or paroxysmal raving. In that variety, which is usually denominated *hypochondriasis*, the hallucination relates to the patient's own body, or to the circumstances which he conceives have an especial sinister influence upon his own system, fortune, or happiness. The suggestions of his morbid imagination are taken for realities. He believes himself afflicted with certain incurable and fatal diseases, "particularly with consumption, cancer, stone, and above all, with impotency and the venereal disease." He fancies that some poison has been maliciously introduced into his system ;* or that he has a living animal, or some other very injurious substance in his stomach or bowels. Some patients believe themselves transformed into inferior animals, as dogs, cats, wolves,† oxen,‡ cocks,§ &c. Others imagine themselves converted into trees, plants, pots, clocks, candles, glass, butter, straw, wax, &c. The following lines, by Pope, give a sufficient enumeration of these singular hallucinations.

> Unnumbered throngs on every side are seen,
> Of bodies changed by various forms of spleen.
> Here living tea-pots stand, one arm held out,
> One bent; the handle this, and that the spout;
> A pipkin there, like Homer's tripod walks,
> Here sighs a jar, and there a goose-pye talks.
> Men prove with child, as powerful fancy works,
> And maids turned bottles, cry aloud for corks.

* Some years ago there was a foreigner—a barber in Lancaster, who continued to occupy himself regularly and cheerfully with his customers, and to converse rationally upon all subjects except his own fortune, and the universal conspiration among his neighbours to poison him. He cooked his own victuals, and regularly every morning went about a mile to the river Conostoga to supply himself with water, which he asserted could contain no poison, since the fish continued to live in it.

† Qui lyncanthropia detinentur, noctu, domo egressi, lupos in cunctis imitatur, et donec dies illucessat, circa defunctorum monumenta plerumque vagantur.—*P. Aegineta. De re Med.* lib. iii. cap. 16.

‡ This was the case with the daughter of the king of the Argives; whom Virgil mentions.—*Protides implerunt falsis mugibus agros.* Eclog. vi. The madness of Nebuchadnezzar appears also to have been of this kind.

§ Alter gallos cantare audiens, ut hi alarum ante cantum, sic ille brachiorum plausu latera quatiens, animuntium sonum imitatus est.—*Galen. de locis affectis.* l. iii. c. vi. as quoted in Reil's Fieberlehre.

Tissot mentions an instance, in which the patient believed himself to be a lump of butter, and would not suffer any fire near him, lest he should melt. An eminent painter imagined himself made of wax, and avoided all contact with hard substances. (Tulpius.) Zacutus Lusitanus mentions a person who believed that his posteriors were composed of glass, and would on no account, sit on any thing but the softest pillows. Some hypochondriacs have thought themselves dead; others imagined that their souls formerly resided in some inferior animal, or in some fellow-creature; in short, almost every imaginable hallucination of this kind has been known to occur in this variety of mental disease.

In many instances of monomania, the hallucination is not of a distressing or sombre character. Some patients, though perfectly sane upon every other subject, have an unalterable belief, that they are destined to make some great discovery, as the perpetual motion, the philosopher's stone, the squaring of the circle, &c. Others imagine themselves the legal heirs of crowns, princely fortunes, and hereditary honours. Professor Titel of Jena, continued to perform his professional duties for some time, although labouring under the fixed hallucination of believing himself to be Emperor of Rome.* I knew a person who for more than twenty years was firmly persuaded that he was the President of the United States; and yet this individual would converse and think rationally upon all the ordinary concerns of life. Some believe themselves invested with a special commission from heaven to perform certain pious acts, or to commit some deed, often cruel and horrid, under the persuasion that it is the command of providence, and necessary for the general welfare of the world.† Others fancy they converse with spirits, angels, and messengers from heaven. Tasso, in the latter years of his life, obstinately maintained, that a spirit regularly visited, and held conversations with him.‡ Was not the celebrated Swedenborg a monomaniac?§ Some monomaniacs have believed themselves to be the Messiah. Dr. Rush informs us that he has seen two instances of this kind. "We see this form of mania," says Dr. Rush, "in the enthusiastic

* Reil, Fieberlehre, b. iv. p. 39.

† Pinel mentions the case of a monk, who imagined that the holy virgin had commanded him to murder a person whom he considered an unbeliever.

‡ Hoole's Life of Tasso, p. 48.

§ Of this kind of hallucination was that of the man mentioned by Horace:—

——— Fuit haud ignobilis Argis
Qui se credebat miros audire tragœdos,
In vacuo, lætus sessor, plausorque theatro.
Cetera qui vitæ servaret munia recto
More; &c.

votaries of all pursuits and arts of men. The alchymists, the searchers after perpetual motion, the metaphysicians, the politicains, the knight-errants, and the travellers, have all in their turns furnished cases of this form of derangement."*

III. *Dementia.*

This variety of mental disorder "consists not in false perception, like the worst grades of madness, but of an association of unrelated perceptions, or ideas, from the inability of the mind to perform the operations of judgment and reason. The judgments are generally excited by sensible objects; but ideas, collected together without order, frequently constitute a paroxysm of the disease. It is always accompanied with great volubility of speech, or with bodily gestures, performed with a kind of convulsive rapidity. We rarely meet with this disease in hospitals; but there is scarcely a city, a village, or a country place, that does not furnish one or more instances of it. Persons who are afflicted with it are good-tempered and quarrelsome, malicious and kind, generous and miserly, all in the course of the same day."†

Dementia is therefore directly opposed in its phenomena and character to monomania; for in this latter variety of insanity, the mind is fixed upon some particular subject, and upon which alone it hallucinates; whilst in dementia, there is no leading idea, and "the mind," as Dr. Rush expresses it, "may be considered as floating in a balloon, and at the mercy of every object and thought that acts upon it."

IV. *Idiotism.*

This variety consists in a defective development, or impairment of all the intellectual faculties, amounting sometimes to a total absence of mind; and, in some instances, even to a destitution of the instinct which leads to the gratification of the animal appetites. Idiotism is frequently congenital. It may however be produced by various causes, as apoplexy, epilepsy, chorea, blows on the head, onanism, &c. It is the most hopeless form of mental disease; and, when congenital, or produced by the spasmodic affections just mentioned, it may be regarded as absolutely irremediable.

Treatment.—In France, England, and the United States, there is in general but little medicine employed in the treatment of mental diseases. In the year 1819, the expenses incurred

* Boileau says:—

> Tous les hommes sont fous; et malgré tous leur soins,
> Ne different entre eux, que du plus au du moins.
>
> Sat. iv. p. 27.

† Rush, On the Diseases of the Mind, chap. ix.

for medicines at the Glasgow Lunatic Asylum was but eighteen pounds sterling, whilst the sum expended for food and beer amounted to £1225. At the Exeter Hospital £1162 was expended for food, and only £33 for medicines and instruments during the year 1819; and in the Institution at Nottingham, the necessaries of life cost £920, whilst the expense for medicine was only seven pounds, during the same period.

Fifty years ago, the amount of expenses for medicines for the same number of patients, during an equal period, would have been much reater, although the proportion of cures effected was then considerably smaller than at present. Even at the present day, much more medicine is employed, according to Dr. Casper, for the cure of insanity, in the German hospitals than in those of England and France, although the success of the former appears to be considerably less than that obtained in the latter.* The truth is, *medicines*, properly so called, are by no means the most useful agents in the treatment of a majority of mental diseases. *Much more is in general to be effected by appropriate moral influences*—by kind and humane treatment, and comfortable seclusion. The physician who looks for particular success in the management of lunatics, must enter into their feelings—take an interest in their real or imagined pleasures and pains, soothe and admonish them in a tone of kindness and affection, and appear among them, not as a stern ruler, but as a sympathizing friend and protector. It is by a moral treatment of this kind, more than by the materia medica, that the most good may in *general* be done in the management of patients labouring under mental diseases. The cruel and coercive measures that were formerly so generally adopted in the treatment of insane persons, are as injurious as they are repugnant to the best feelings of the heart. Humanity and reason combine against the employment of such remediate measures; and the triumph of reason and good feeling over cruelty and error, is no where more delightfully illustrated than in the improvement that has of late years been effected in this respect. Instead of subduing the miserable maniac with implements of terror and torture, or keeping him in trembling subjection by threatening looks and menaces, or endeavouring to put reason right by drugs, chains, cells, and hand-cuffs, physicians now know that a kindlier mode of management will often call back the unsettled and wandering intellect, when a contrary course would only fix it the more firmly in its wild and distracted mood.

One of the first measures in the treatment of *mania*, should

* In Berlin, the proportion of cures effected has been estimated at about 0.28; at Vienna about 0.27—whereas in France it averages about 0.44. Casper, loc. cit. p. 413.

be to remove the patient from his friends and home, and to place him in some quiet and secluded situation. Dr. Rush strongly insists upon the importance of separation and proper seclusion; and the most eminent of the English, German, and French writers, advise the adoption of this measure "Confined to a regular life and discipline," "says Esquirol," the patient is naturally led to reflect on this change in his situation; while the necessity of living among and submitting to the control of strangers is to him a powerful stimulus to regain his lost freedom and reason." When thus confined, the medical attendant must in the first place endeavour to obtain the confidence and good will of the patient; kindness, consolation, affability, and in some cases a moderate yielding to the hallucination, will in general soon acquire the patient's confidence. Having gained this point, he must "soothe the irritable, repress the insolent, cheer the desponding, calm the excited, check the forward, encourage the timid, resist the importunate and petulant, but carefully attend to all reasonable requests." (Knight.)

Let it be observed, however, that in recommending separation and confinement, it is not intended to object to regular exercise in the open air, or even to enjoy the society of suitable individuals during the patient's intervals of comparative calmness. Whenever the weather is favourable, and the patient's condition will admit of it, free air and ample exercise should be allowed. The mutual association of patients similarly affected, and particularly during convalescence, has also a favourable tendency. "Nothing, says Georget, contributes more to the recovery than the mutual association of convalescents;" and for this purpose, it is particularly important that the institutions in which insane patients are placed, should have extensive gardens, well furnished with trees and flower-beds, and instruments of bodily amusements, such as swings, &c.

Idleness in monomaniac patients should be discouraged. Various amusing exercises—"as playing at quoits, the chase, shooting, and even chess, checkers, cards, and push-pin, should be preferred to idleness." (Rush.) Indeed, in cases of a moderate grade of maniacal excitement, *travelling* will sometimes do much good. Esquirol states, that he has always found the disease conspicuously moderated, after a long journey, particularly if it has been attended with difficulties and privations, and performed through a strange country. It is on this account, perhaps, that foreigners are more apt to be cured in England, than natives, (Wills;) and that strangers sent to Paris are more readily restored to reason than the inhabitants of that city.

I have stated above, that in order to obtain the patient's confidence, it may be proper, occasionally, to give way in some degree to his hallucinations. This, however, must be done with caution. In general, it is improper to encourage in any

degree, the particular error, or false ideas under which the patient labours, and this is more especially to be observed with monomaniac patients. On the other hand, however, peremptory and absolute contradiction, is perhaps still more unfavourable than indulgence; for it seldom fails to excite the anger and contempt of the unfortunate sufferer against the person who thus vehemently opposes the current of their hallucinated notions. "In the furious state ,insane patients," says Dr. Rush, "should never be contradicted, however absurd their opinions and assertions may be, nor should we deny their requests by our answers, when it is improper to grant them. In the second grade of the disease, we should *divert* them from the subjects upon which they are deranged, and introduce, as it were accidentally, subjects of another and of an agreeable nature. When they are upon the recovery, we may *oppose* their opinions and incoherent tales, by reasoning, contradiction, and even ridicule."

Where the insanity turns upon some prominent idea, or passion, much benefit may sometimes be obtained by dexterously exciting some counteracting emotion, or sentiment. Esquirol states, that a melancholic man, who was in a state of great despondency, had his intellectual energies restored, by having been told that he had a law-suit on hand. An insane soldier was informed that the campaign was about to open. He immediately requested permission to join the army; it was granted, and he arrived at his regiment perfectly sane. "The excitement of new turns of thought, says Georget, the rousing of inert faculties, form a third principle of moral treatment. For instance, endeavour to convince a king that he is without power, with the hope of reflecting that he may have been in error. Take the patient to the situation whence the subject of his hallucination proceeds; as for instance, fancied voices, enemies, &c., and assure him of their non-reality. Awaken the passions, by reproaching them with indifference to parents, &c.; relate to them their past conduct, by telling them of their designs, as suicide, destruction of children, hatred to husbands, &c; and by this management, cures may sometimes be effected. In some instances it will be proper to substitute a real for an imaginary grievance." If a melancholic is harassed by *ennui*, withdraw from him his usual sources of amusement, so as to inflict on him real privations. The real *ennui* which he will then suffer, will often prove a powerful means of diverting his mind from its hallucinations. If a patient, says Esquirol, imagine himself abandoned by his friends, we may sometimes promote his recovery by depriving him of every testimony of their affection, and thus awakening him to a sense of his real loss.

Dr. Rush relates some remarkable instances in which sudden terror, excited by actual danger, had the effect of curing in-

sanity. During the exacerbations or periods of excitement, it sometimes becomes necessary to employ coersive measures. The only means employed for this purpose, in the hospitals of this country, and I believe also in those of Paris, is the *strait jacket* and Rush's *tranquillizer*. Haslam condemns the former mode of restraining patients, in strong terms. It is certainly an offensive and oppressive mode of coersion in a state of furious mania. Haslam employs, instead of it, a belt from eight to ten inches wide. This is passed round the lower part of the body, above the arch of the pubis, and fastened on the back by strong buckles. On each side, leather bags are fastened. Into these the hands of the patient are thrust, and secured there by proper bandages. By this contrivance the respiration is not impeded, as is always more or less the case with the *strait waistcoat;* nor is the perspiration suffered to become offensive and injurious by being absorbed and retained in the waistcoat. Patients, too, may walk about with this belt without much inconvenience, and they are said, always to endure it with much more patience than the *jacket*. In Dubuisson's private institution, an arm-chair resembling Dr. Rush's *tranquillizer*, is used as a mode of coersion. It consists of an arm-chair with a high back and footboard. The arms, legs, feet, and body are fastened to this chair by strong and broad straps furnished with buckels.

A simple and very excellent means for moderating the violence of a paroxysm of mania, is the *total exclusion of light* from the patient. This is daily practised in the Salpétrière. When a maniac begins to rave violently, a piece of thick cloth is quickly thrown over his head, and fastened over the eyes. This, it is said, almost always immediately moderates the patient's fury, and he may then be easily conducted into his apartment and properly secured. Esquirol particularly lays great stress on the soothing influence of darkness on maniacs; and Dr. Rush enjoins it as a measure of much importance during the first stage of the disease. Confinement, darkness, solitude, low diet, and cold affusions will rarely fail to subdue the most turbulent and furious maniacs.

Medicinal treatment.—Blood-letting was formerly much more commonly resorted to in maniacal diseases, than is now done. Dr. Rush was a strenuous advocate for the employment of this evacuation in general mental derangement; and the old established *traitment del' Hotel-Dieu*, says Pinel, consisted almost entirely of repeated blood-lettings. In the Parisian and English institutions, we are told that venesection is now but rarely employed in mental diseases. There can be no doubt, however, that the abstraction of blood will often contribute considerably to the reduction and removal of acute mania; and we may safely, and generally advantageously, resort to this

measure in all instances in which the pulse is full and active, or tense, corded, and quick, in connexion with "great wakefulness, redness of the eyes, a ferocious countenance, and a noisy and refractory behaviour." When the disease assumes the grade of phrenitis, with raving delirium, a hard and bounding pulse, throbbing of the carotids, flushed face, red eyes, prompt and free venesection cannot with propriety be dispensed with. Georget* says, that in cases that occur about the pubertal period, accompanied, as they usually are with general plethora, repeated small bleedings are particularly useful; and the same observation applies to cases that occur at the turn of life in females. In monomania, or generally in all those varieties of mental alienation that are unattended with paroxysms of high cerebral excitement, bleeding can do no good, and will often prove permanently injurious.

Purgatives are often very useful auxiliaries in the remediate management of lunatics. Where there is reason to believe that the bowels are in a loaded condition, or irritated by vitiated secretions, that is, where the tongue is furred, with pain on pressure in the region of the liver, a hard abdomen, and constipation, active purgation is particularly proper. Dr. Prichard observes, that in cases of this kind (*enteric mania,*) that the rectified oil of turpentine, in union with castor oil, is decidedly the most valuable purgative. Esquirol prefers mercurial purgatives, with the view of exciting the biliary secretion; and in the instances just referred to, where there is tension and tenderness in the right hypochondrium, there can be little doubt of their superiority. There are cases, says Dr. Rush, "in which purges should be given daily, so as to excite an artificial diarrhœa, and calomel and jalap should be preferred for this purpose. Where there is reason to suspect the existence of verminous irritation, anthelmintics should be given in conjunction or alternation with active purgatives. An infusion of the root of spigelia, followed by a full dose of turpentine and castor oil, will in general answer this purpose better than any other articles of this kind.

Emetics may occasionally be employed with manifest advantage, in the milder forms of mental derangement—more especially in melancholia, and in recent cases of hypochondriasis. They are improper, however, where there is much cerebral irritation, or in cases attended with much febrile excitement. Esquirol has found emetics useful in puerperal mania.

Mercury is much recommended by some writers, whilst others condemn its use in maniacal affections. With Dr. Rush, it was a favourite remedy in mania. "Too much," he observes, "cannot be said in favour of salivation in general mad-

* De la Folie, p. 293.

ness;" and he strongly recommends it also in partial insanity. As an alterative, it may occasionally be used with very considerable advantage in chronic mania, particularly where the disease is attended with functional disorder of the biliary and digestive organs. Dr. Knight states that he has found the blue pill a valuable medicine in cases of long standing, and that he never knew it to be productive of any injurious effects; but he apprehends, that in recent cases of mania, the *constitutional* influence of mercury must be prejudicial in any form.*

Narcotic and antispasmodic remedies were formerly much employed in the various forms of mental derangement, and although by no means generally applicable, they may in certain cases be used with advantage after the general indications have been adequately attended to. Opium, when given in small doses, says Dr. Rush, may be useful, but it should never be given in large doses, with a view of procuring sleep in general mania. Regimen, exercise, and purgation, with the use of the warm bath, will do more towards procuring sleep than any other remedies that can be employed. Indeed, opium never fails to increase the wakefulness, and when given in strong doses, before the general and cerebral excitement has subsided, it rarely fails to aggravate the disease. In chronic mania from masturbation, camphor has been recommended as often particularly beneficial; but almost all recent writers agree that it very rarely produces any good effects, but on the contrary often does manifest injury. In *puerperal mania*, however, Dr. Gooch asserts that camphor, given in union with the extract of hyoscyamus, (ten grains of each) is the most useful anodyne we possess.† Dr. Knight also has found this combination very useful as a somniferous remedy in mania unattended with cerebral congestion, or a general phlogistic habit.‡

In maniacal affections succeeding sudden suppression of the catamenia from cold, or any powerful mental emotion, advantage may be expected, says Dr. Prichard, from stimulating emmenagogues, in conjunction with frequent and efficient abstractions of blood, and warm semicupium. He considers the tincture of melampodium and the oil of turpentine as decidedly the best emmenagogues in cases of this kind. Georget also recommends the use of emmenagogues in conjunction with mustard, pediluvia, hip-baths, and leeches to the pudenda, in cases attended with suppressed menstruation and cephalalgia.

The warm bath is a cardinal remedy in the treatment of insanity in the Parisian hospitals. In the *Salpétrière*, the women

* Observations on the Causes, Symptoms, and Treatment of Derangement of the Mind, &c. By Paul Knight, M. D.

† Observations on Puerperal Insanity. Transact. of Lond. College of Phys. 1820, vol. vi.

‡ Loc. cit.

use the warm bath two or three times a week, unless an apoplectic tendency, or some other circumstance contra-indicating its use, be present. They remain in the bath from a half to two hours. (Casper.) Patients of a thin, nervous, and irritable habit of body, says Esquirol, may be kept in the warm bath a very considerable time with advantage. When the vessels of the head are strongly congested, and there is much cerebral irritation present, cloths saturated with *cold* water should be kept constantly applied to the head, while the patient is in the bath. The heat of the water should be about 99 or 100° of Fahrenheit.

The cold bath, also, has been much employed in maniacal affections. In young, robust, and sanguineous patients, and particularly when the skin is dry and preternaturally warm, considerable benefit will occasionally accrue from cold affusions. More advantage, however, is in general to be obtained from the application of cold water or ice to the head, in young and excited maniacs with much sanguineous determination to the brain. In the early stages of mania, where there is much headach, redness of the face and eyes, and turgidity of the vessels of the head, *cold affusions* "from a cock, funnel, or pitcher," upon the top of the head, after leeching or cupping, with stimulating pediluvia and laxative enemata, often produce the most excellent effects.* "The signal for removing the cold applications," says Dr. Rush, "should be, when they produce chilliness, and sobbing or weeping in the patient." Dubuisson, in conformity with the recommendation of Hill and Cox, has applied æther to the head with much advantage.†

Counter-irritating applications may occasionally be employed with benefit in insanity. Esquirol was formerly much in the habit of applying moxas to the back part of the head, in cases attended with much torpor; but he has for some years past in a great measure discontinued this practice. "They augment," he says, "the erythism, torment the patient, increase his irritability, and convince the insane that he is a victim to our cruelty.‡ Georget, however, speaks strongly in favour of setons, moxa, and blisters to the neck in monomania, and other varieties of mental derangement accompanied with stupor, insensibility, and cerebral inactivity. These, he says, in conjunction with the repeated exhibition of vomits, rouse the energies of the nervous system, in the most desperate cases of *aliénées stupides*. Dr. Rush, also, speaks decidedly in favour of the use of blisters. "They have," he says, "been considered as remedies of doubtful efficacy; but it is only be-

* Esquirol, loc. cit.
† Des Vesanies au Maladies Mentales, p. 225.
‡ Loc. citat.

cause they have not been employed in the manner, or the precise time that was necessary to obtain benefit from them. In the first stage of tonic or violent madness, the disease is entrenched as it were in the brain. It must be loosened, or weakened, by depleting remedies, before it can be dislodged, or translated to another part of the body. When this is effected, *blisters* easily attract it to the lower limbs, and thus often convey it at once out of the body.

The circular swing has been much used in the institution for lunatics at Glasgow, and "in some cases, with wonderful good effects." Dr. Knight also asserts that this agent possesses "immense power" in subduing general and cerebral excitement. "A patient, subject to its action, is speedily affected with giddiness and sickness, and the peristaltic motion of the whole alimentary canal seems to be excited, and in some instances to such a degree that the patient vomits, and passes fæces in rapid succession and great abundance, along with his urine. Apprehensions have been expressed lest the use of the circular swing should induce apoplexy: having attentively examined the sources of these fears, I conclude them to be groundless; nor have I ever seen the slightest reason to apprehend such result; nor do I believe it can occur, *if the patient be not in a furious state when put into the swing.*" The best time, says Dr. Knight, for using the swing, "is a little before retiring to rest at night, as the unloading of the alimentary canal, the lowering, and the relaxation of the skin, very generally predispose to sound and refreshing sleep.*

Music often has a most soothing influence over the distracted and raving minds of maniacal patients. Dr. Rush observes that "lively tunes are as offensive as comic representations in this disease." Tissot relates an instance of insanity which was permanently removed by music;† and we read, that Saul's melancholy was dissipated by the harp of David—*Tange lyram digitis, animi dolor omnis abibit dulcisonum reficit tristia corda melos.*

* Loc. cit. p. 63.
† Reil's Fieberlehre.

CHAPTER XIII.

DELIRIUM TREMENS.

Mania à Potu.

This very remarkable variety of mental disease, is characterized by general inquietude, tremor, continued watchfulness, cool skin, perspiration, delirious loquacity, and sensorial illusions.

It occurs only in *habitual* drunkards, and in such as are addicted to the inordinate use of opium, and, perhaps, other narcotic stimulants. So long as the customary quantity of the stimulus is taken, the disease seldom, if ever, supervenes; but, if from necessity, sickness, or a temporary disgust, the ordinary stimulating potations are suddenly left off, or greatly diminished, the activity of the brain becomes morbidly increased, and mental disorder, in many instances, speedily ensues. "It is important to bear in mind," says Dr. Coates, "that this disease is the result, not of the *application*, but of the *sudden intermission* of the use of these articles."*

The disease usually commences with lassitude, general indisposition, a feeling of distress in the epigastrium, anorexia, nausea and vomiting, giddiness, a sense of confusion in the head, want of sleep, an anxious expression of the countenance, and tremor of the hands. After a day or two, the countenance exhibits an expression of alarm and suspicion, the eyes are cast about with quick and scrutinizing glances, or often fixed, apparently upon some object that attracts the attention for a moment, and then quickly withdrawn; the tremor of the hands increases; the patient becomes irritable and sometimes irascible; he is extremely restless, walks continually to and fro, and is wholly unable to obtain a moment's sleep. He now begins to manifest mental disorder, becomes loquacious, says he feels well, and is tormented with a more or less continued succession of various alarming, disgusting, and ludicrous *apparitions*. He fancies that he sees dogs, snakes, cats, mice, and other animals in his room, and disgusting vermin crawling over the

* See an able and highly interesting memoir on this disease, by Dr. Coates of this city, published in the North American Med. and Surg. Jour. vol. vii. p. 34.

bed, and on his clothes, or that various individuals have entered his room, for the purpose of robbing, killing, or annoying him; and to avoid these and other horrid illusions, he often calls out loudly for assistance; runs to the door to make his escape, or to the window to leap out; is greatly agitated, vociferates, threatens, and sometimes raves violently. Sometimes he fancies that he hears loud and strange noises around him, over head, in an adjoining apartment, or loud and frequent knocking at the door. His mind and body are in a continued state of action; he calculates, projects, walks hurriedly about the room, picks up money, runs up to the window and calls out loudly to some imaginary person in the street, starts with terror and agitation from the presence of frightful and disgusting apparitions, insists that he is well, and confined with some sinister intentions against him, and requests to be suffered to go out in pursuit of his usual occupations. If the patient is flatly contradicted, he usually becomes much exasperated, and insists with vehemence on the correctness of his notions; but, when he is soothingly dealt with, he will now and then answer certain questions mildly and even distinctly, and by judicious management, may, in general, be restrained without any violent coersive measures. When the disease rises to a high grade, the patient becomes violently and often furiously delirious, talks incessantly, is restrained with difficulty, and is unable to recognize his friends and acquaintances.

Patients affected with this disease do not appear to be susceptible of much bodily pain. "They never seem to experience any sufferings from fractures, though they may be at the time subjecting these to the most constant friction and concussion; and when the delirium supervenes upon a pleurisy, or other inflammatory affection, accompanied with pain, the principal disease seems to disappear, even to the eye of the experienced practitioner, to be reproduced at a later period, when the brain and nerves regain their ordinary tranquillity." (Coates.)

The pulse in this disease varies considerably in different cases. In some instances it is hard, full, and frequent, but it is much more commonly soft, full, and quick, without strength or tension. The skin, generally, retains its natural degree of temperature and moisture; the tongue is moist, and covered with a white fur; the bowels are torpid, and there is usually an entire loathing of food throughout the whole course of the disease, but the thirst for cold drinks is almost always considerable.

The duration, as well as the degree of violence of *delirium tremens* vary much in different cases. Sometimes slight tremor of the hands, with occasional transient manifestations of delirium, sensorial illusions, and watchfulness, continue for a day or two, and then pass off. At others, the wakefulness,

tremor of the hands, and general restlessness and agitation continue for five or six days, with delirium and annoying apparitions at night, whilst but little mental hallucination is noticed during the day. In some cases, the symptoms described above continue with but slight remissions day and night, for one or two weeks and upwards, and in highly aggravated instances, the disease assumes the character of wild and ungovernable mania. Dr. Armstrong observes, that when convalescence is not restored within the first month, there will be a risk of long-continued, if not permanent alienation of mind.

Mild cases of this disease, when left to themselves, have been known to terminate spontaneously, (Stoughton,) on the supervention of diarrhœa or vomiting. Much more generally, however, the occurrence of profuse discharges of this kind bring on a low and typhoid condition of the system, and this is especially apt to be the case in persons who have been long and exceedingly intemperate, and in whom the disease is accompanied by some local inflammatory affection or general fever. In full and robust habits, the disease not unfrequently terminates in fatal convulsions or apoplexy.

Pathology.—It appears to be generally admitted that this disease has its primary and essential location in the sensorium commune, and that it is wholly independent of inflammation or vascular turgescence in this organ. It would seem to consist in a purely dynamic disorder—a morbid activity of the brain, from the sudden abstraction of an habitual stimulus by which its excitability had been long repressed or blunted. Dr. Coates considers it as consisting in "a heightened activity of the sensorium," from the generation, as it would seem, of an inordinate degree of vital activity in the brain ;* and similar views of the nature of this affection have been expressed by Dr. James Johnson, Dr. Ayre, and many other eminent British physicians.† Dr. Joseph Klapp, of this city, has published a series of cases with observations tending to show that the proximate or essential irritation of this disease is seated in the stomach, and it must be confessed that the arguments adduced in support of this opinion, possess considerable plausibility.‡ It is asserted in support of this opinion, that dissection almost uniformly discloses traces of previous inflammation in the stomach ; that, in nearly all instances, nausea, vomiting, and a foul tongue occur ; and that the operation of an emetic, in many cases, brings off from the stomach a viscid, light-brown, or black coloured fluid of the consistence of boiled tar ; and finally, that the disease yields more frequently and speedily under the em-

* Loc. citat. p. 225.
† Med. Chir. Rev. Feb. 1828, p. 484.
‡ Eclectic Repertory, vol. vii. p. 259.

ployment of emetics than under any other mode of remediate management that has hitherto been recommended.

In reply to these arguments it may be observed, that post-mortem signs of inflammation cannot be received as a valid proof that the inflammation was primary and causative, in relation to the peculiar train of phenomena which characterize the disease; for nothing appears to be more satisfactorily established, than that mucous inflammation of the alimentary canal very often surpervenes during the latter period of all violent diseases; and that the ordinary signs of inflammation—increased vascularity and sanguineous engorgement—are frequently produced in the last moments of life, or in *articulo mortis*. If the disease depended on mucous inflammation of the stomach, can it be conceived that emetics should in any instance operate beneficially? Would any prudent physician prescribe an emetic in a case attended with unequivocal gastritis? Dr. Klapp, indeed, does not appear to consider the morbid condition of the stomach as a state of inflammation; although Dr. Staughton, who advocates the gastric pathology of this affection, lays particular stress on the post-mortem signs of phlogosis in the stomach, as an evidence of the correctness of this pathology. Dr. Klapp seems to consider the gastric affection as rather the reverse of inflammation—as a state of torpor, insensibility, and chronic irritation, or morbid excitement of the stomach. The argument drawn in favour of this opinion from the frequent good effects of emetics in this malady, affords it but little support. The *post hoc, ergo propter hoc*, is always a fallacious mode of reasoning. We may admit, to the full extent, the beneficial influence of emesis, and yet consistently deny our assent to the doctrine which alleges that the stomach is the primary seat of the disease. With regard to the foul tongue, vomiting, &c. mentioned in confirmation of this view of the nature of the disease, it may be observed, that the majority of writers do not bear testimony to the frequent occurrence of these phenomena. Dr. Coates found them "generally absent in the cases that came under his own inspection." Dr. Sutten mentions them only as symptoms accompanying the disease, where it occurred in connexion with typhus fever, scarlatina, or some other acute affection; and Dr. Brown of New-York has noticed a foul tongue only in two out of eight cases. Within the last six years, I have seen about ten cases of this disease, and although I have paid particular attention to all the phenomena that might throw light on its pathology, I do not remember of having noticed a foul tongue in more than three instances, two of which were complicated with pneumonia, and the other with dysenteric symptoms.

Prognosis.—Delirium tremens is not, in general, a very dangerous affection, when it occurs in a simple and uncomplicated

form, and in systems not yet greatly broken down and depraved by a long course of excessive intemperance. If it supervenes during the course of violent forms of fever, and more especially during the existence of acute visceral inflammation, it almost invariably terminates fatally. The disease is also attended with peculiar danger when it occurs in confirmed drunkards, who have previously laboured under chronic hepatitis, or some similar organic affection. Subjects of this kind generally rapidly sink under the disease, (Armstrong.) When the delirium becomes constant, the pulse rapid and very small, the extremities cold and covered with perspiration, the pupils small and contracted, with subsultus tendinum, and an agitated motion of the muscles of the face, death may be regarded as inevitable. It is also a particularly unfavourable sign when coma, with sonorous respiration or convulsions, ensue. The occurrence of tranquil sleep, even of short duration, announces a favourable tendency in the disease; and no symptoms can be regarded as indicative of declension of the malady, so long as the patient is unable to obtain some sleep.

Treatment.—If delirium tremens depends—as I am well persuaded it does—on a morbid activity of the sensorium, independent of inflammation or sanguineous congestion, the prominent indication is obviously to subdue this inordinate cerebral activity; and it remains only to inquire, by what remedies or course of treatment this object is best accomplished.

If we attend to the circumstance that this peculiar condition of the brain is almost invariably the consequence, not of the application, but of the *sudden abstraction* of the customary stimulus, we are led, *à priori*, to infer, that the best mode of removing it, is to supply a stimulus, which may be capable at once of blunting and exhausting the morbid excitability of the sensorium. For this purpose, *opium* is decidedly the most valuable remedy we possess. Dr. Coates observes, and correctly too, that sleep must be produced *coute qui coute*—that the patient must *sleep* or *die*. Dr. Coates, however, goes too far, I think, when he expresses his conviction, that *every* case of simple delirium tremens may be cured by "the opiate treatment." Satisfied as I am, that opium is the *remedium magnum*—the "sheet anchor" of our hopes, in this affection, there nevertheless exists no doubt in my mind, that important advantages may also be derived, in some instances, from other remedies, auxiliary to this potent narcotic. When the bowels are constipated, and there is reason to presume that they are in a loaded state, a purgative should be administered before recourse is had to the opium. This, like all other affections, may come on while the intestinal canal is charged with vitiated secretions and other irritating substances; and when it

is considered, that intestinal irritation from sources of this kind has a powerful tendency to originate and support morbid excitement in the brain, the propriety of administering one or two mild purgatives preparatory and auxiliary to the employment of opium in this disease, would appear to be very obvious. It has appeared to me, indeed, that without this precaution, the free use of opium has a tendency, in some instances, to give rise to dangerous determinations to the head, and to bring on *coma* instead of healthy sleep. About four years ago, I was called to a gentleman, a few miles from the city, labouring under the ordinary symptoms of this disease. I found him sitting on his bed, busily engaged in driving away eels and snakes, which, he said, were annoying him; and he requested me to turn out of the room several negro children, which had placed themselves, he thought, on the tops of the bed-posts. This was the second day of his illness; his pulse was moderately full and compressible, and his tongue covered with a thick white fur. I at once directed two grains of opium to be given to him every hour, and to be continued until sleep should ensue. In the evening I visited him again. I found him lying on his back, apparently perfectly unconscious, his hands and arms, and muscles of the face in continual motion, and uninterruptedly muttering indistinct words; the pupils contracted, and the whole frame in a state of tremulous agitation. The skin was moderately warm and moist, and the pulse frequent, small, and more firm than on the preceding day. With much difficulty I got him to swallow about an ounce of castor oil, with three drachms of ol. turpentine, and directed a laxative enema to be administered in two hours afterwards. Early next morning I saw him again, and found him much better. The purgative had acted four or five times, and brought away large and very offensive stools. He immediately recognized me when I entered the room; his pulse was frequent and feeble, and he was still much harassed by various disgusting and alarming *apparitions*. I now directed him a grain of opium every hour; after the eighth dose was taken, he fell into a tranquil sleep, which lasted several hours. He recovered under the use of this narcotic without any other remedy. I cannot, indeed, assert with certainty that the comatose state mentioned above was the result of the influence of the opium; but I am led to ascribe it to this cause from having, in another instance, witnessed similar phenomena, after the use of large doses of this narcotic. Dr. Coates says: "I have never seen, read of, or heard of an instance in which opium was productive of harm." I must, indeed, be greatly mistaken in the diagnosis, if I have not seen one unequivocal instance of this kind. In a case which I regarded as pure and uncomplicated delirium tremens, four grain doses of opium were given every two hours.

In twelve hours the patient was comatose, became convulsed, and soon expired. I mention these facts, not to deter from the use of this valuable, and I may say indispensable remedy in this affection, but as a caution to the practitioner to watch with assiduity its administration; "because we know not whether poisonous effects will be produced by an arithmetical or a geometrical increase—whether five grains, or thirty grains in addition are sufficient to endanger the patient's life."*

The quantity of opium which it is usually necessary to administer, before the desired soporific effect is produced, is often truly enormous. In some instances, from twenty to thirty grains, in divided but frequent doses, are required before the full advantages can be obtained, which it is capable of affording. My usual practice has been, to exhibit two grains every hour, (after free purgation) until sleep is induced.

With regard to the employment of *blood-letting* in this affection, the opinion of the profession seems to be pretty well settled as to its general impropriety and inefficacy. Dr. Sutton informs us, that where blood-letting "has been principally relied on, he has observed a fatal termination of the disease in almost every case."† Dr. Armstrong, who is not inclined to undervalue this measure, asserts, that he is "fully persuaded that there are not many instances where the lancet is requisite;" yet "in constitutions that have not been shaken by reiterated drunkenness, he has known early and *moderate* venesection of much use." The experience of Dr. Brown, of New-York, coincides with the observations of Dr. Armstrong, on this point. Dr. Stewart "had seen the disease on a large scale. Almost all those patients who were treated on the antiphlogistic plan died, while those who were treated by opium and stimulants recovered."‡

It appears, also, that the experience of Dr. Gregory, Dr. Shiel, Mr. Lambert, Mr. Mackelan, Mr. Chinnock, and Dr. Ayre, is decidedly in favour of the stimulating and narcotic treatment, in uncomplicated cases of the disease.§

Cupping about the head may, under certain circumstances, prove very useful. Where the sanguineous determination to the brain is considerable, and the raving becomes constant and violent, cups may be applied to the temples, forehead, and neck with much advantage. Dr. Coates informs us that, in the Pennsylvania Hospital, Dr. Parrish has resorted to cupping in delirium tremens with great benefit. In an instance I attended about six months ago, where there was much vascular turgescence of the head, and a state of delirium approaching the

* Coates, loc. cit. p. 214.
† Tracts on Delirium Tremens, &c. p. 66.
‡ Med. Chir. Rev. February, 1828, p. 484.
§ Med. Chir. Rev. February, 1828, p. 485.

raving of *phrenitis*, immediate and very decided benefit was derived from cupping. *Blisters* also will sometimes act beneficially when applied to the legs, or to the back of the neck, in cases attended with violent cerebral excitement. In one case, in which the disease seemed to verge into phrenitis, I have known a large blister, laid between the shoulders, to mitigate the symptoms very considerably. Dr. Coates, referring to the practice of Dr. Parrish in the Pennsylvania Hospital, observes, that blisters appear of more service than cupping, "as they did not equally weaken the patient."

Emetics, as has already been intimated, deserve more attention as curative means in delirium tremens, than any other remedies that have been employed, *with the exception of opium*. In my own practice I have had unequivocal testimony of the frequent usefulness of emetics in this malady. In several instances, however, they failed, in my hands, of doing any good; and in two cases, within the last six years, they were unequivocally injurious. To one patient, who had been long a confirmed drunkard, I administered, in divided doses, fifteen grains of tartar emetic. It produced neither purging nor vomiting; but its sedative operation was immediate and powerful. In about an hour after taking the medicine, the pulse became small and extremely feeble—the extremities ice-cold, and a profuse, cold, clammy sweat broke out over the whole body. The patient sunk rapidly, and expired in about four hours after the antimony was taken. In the other instance, the emetic brought on the most profuse and exhausting diarrhœa, and soon prostrated the patient below the point of reaction. Nevertheless, in moderate and uncomplicated instances of the disease, and in patients who have still considerable constitutional vigour left, we may with safety, and often with decisive advantage, resort to one or two emetics. As an auxiliary or preparatory measure to the employment of opium, I am inclined to regard the exhibition of an emetic as often peculiarly beneficial. I have, indeed, known a few cases cured by *emetics*, with little or no other remediate applications; but experience has convinced me, that they are much more worthy of attention as auxiliaries to opium than as a principal curative means. Dr. Brown expresses the same opinion. "Although it has not been our practice," he says, "to depend exclusively upon emetics in the treatment of delirium tremens, we can bear testimony to the utility, in some cases, of premising an emetic to the use of opium. And, no doubt, this is often an important step in the treatment of this disease."*

It is often extremely difficult in this disease to excite vomit-

* Observations on Delirium Tremens, &c. by Dr. Stephen Brown, in the Med. Recorder, vol. v. p. 207.

ing, without administering very large doses. Dr. Klapp gave one of his patients twenty grains of tartar emetic before vomiting was excited; and Dr. Brown mentions an instance in which thirty grains of this article was given before the desired effect was produced. I have, in general, preferred giving the tartar emetic in combination with ipecacuanha, in the proportion of two grains of the former with fifteen of the latter, repeated every ten or fifteen minutes, until vomiting ensues.

Cold and *tepid* affusions have also been recommended in this affection. Dr. Armstrong speaks very favourably of the effects of dashing two or three gallons of *tepid* water, strongly impregnated with salt, over the whole skin, and then immediately drying and rubbing the surface with warm flannel; and, having put the patient to bed, administering forty or fifty drops of tict. opii in a little warm wine. He informs us, also, that in several cases he used *cold* affusions with decided benefit; but he never resorted to this measure except in patients possessing much apparent vigour of constitution, and he always administered stimulants—such as warm wine—immediately afterwards.

Besides *opium*, various other stimulating remedies have been employed in delirium tremens. Dr. Coates considers *camphor* and assafœtida "as powerful agents in restoring the mind to its equilibrium." I have used camphor and opium in combination; but I cannot say that more benefit was derived from this mixture than is usually obtained from the latter article, when given by itself. In several instances, I gave the *camphorated tincture of opium*, during the *declension* of the disease, with the happiest effect. Two drachms of it may be given every three or four hours during convalescence. The carbonate of ammonia, also, may be given with more or less benefit in slight cases, or during the subsidence of the disease. I prescribed this article lately in a case of incipient delirium tremens, with marked advantage. With regard to the employment of *ardent spirits*, I can say nothing from my own experience, as I have never allowed my patients to take any thing of this kind, except warm wine, and, in a few instances, a little weak brandy toddy. The sentiment of the profession appears now very generally and strongly opposed to the employment of spiritous liquors in the treatment of this affection. There is, indeed, something very revolting in the idea of exhibiting copious draughts of the very agent whose destructive influence has caused the wreck of body and mind, which we are called on to remedy. There can be no doubt, that opium will, in general, do all that can be effected by remedies of this kind; and where it may be thought advisable to bring in the aid of a more diffusible stimulus, camphor, ammonia, assafœtida, and Hoffman's anodyne, may be resorted to with propriety.

During the course of the disease, and particularly during convalescence, the diet should be light, unirritating, and fluid. Animal broths will, in general, answer better than any thing else.

CHAPTER XIV.

ASTHMA.

Asthma is a paroxysmal affection of the respiratory organs, characterized by great difficulty of breathing, tightness across the breast, and a sense of impending suffocation, without fever or local inflammation.

In the majority of cases, certain symptoms, indicative of gastric derangement precede, often for several days, the paroxysms of the disease. Among these symptoms, a sense of weight and fulness in the epigastrium, acid eructations, inappetency or voraciousness, heart-burn, flatulency, weight over the eyes, anxiety in the præcordia, and an itching of the skin, are the most common.

The paroxysm generally comes on at night during sleep. The patient is seized with great anxiety, difficulty of breathing, and stricture across the breast, and a short dry cough. These symptoms soon acquire a most appalling degree of violence. The breathing becomes wheezing, extremely laborious, gasping, and suffocative, the countenance expressive of intense anxiety and distress, and the heart generally palpitates violently. The desire for fresh and free air is inexpressibly urgent; the patient insists on the doors and windows being widely opened; or he starts from his bed, and rushes to the window for fresh air, and is wholly unable to remain in the recumbent posture. The extremities are generally cool, sometimes of the natural temperature, and moist; the face is bloated and livid or pale, and the veins of the neck and head are turgid. The pulse is often irregular, intermitting, accelerated, moderately full, and compressible; sometimes it is nearly natural, and occasionally it is full, active, and firm. After these symptoms have continued for an uncertain time, the breathing gradually becomes less laborious and anxious, and towards morning a copious expectoration of viscid mucus very generally ensues, which always brings with it considerable relief. During the ensuing day, the patient usually experiences but little uneasiness or oppression in the chest. On the next night, however, the paroxysm of suffocative respiration returns; and in this way the disease proceeds, with remissions by day, and violent exacerbations at night, for three or four

days in succession, and in some instances much longer, before it finally subsides.

During the paroxysm, the urine is almost always pale and copious, and the abdomen distended with flatus. Bree states that the temperature of the body is generally considerably below the healthy standard. He has found the thermometer placed under the tongue as low as 82° during the asthmatic fit. He observes, also, that the violence and inconvenience of the paroxysm is equal, whether the stomach be full or empty; but that great distress is experienced immediately *after* the fit, if the stomach be completely empty. Patients often experience a sensation in the abdomen, about the commencement of the paroxysm, as if an evacuation from the bowels would certainly greatly relieve them; but this feeling is almost invariably deceptive. No distinct pain is felt in the chest during the asthmatic paroxysm.

Causes.—Asthma very rarely occurs before the age of puberty; yet Dr. Gregory states, that "the period of *youth* and manhood is most prone to it." If, indeed, we include the *acute asthma of Millar*, or as it is more commonly called in this country *spasmodic croup*, under the head of genuine asthmatic affections, as is done by most of the German writers, there can be no doubt of the correctness of this observation; but the spasmodic croup of children, and the true asthma of adults, are manifestly very distinct diseases. It is generally admitted, that a predisposition to this affection is sometimes hereditary. This predisposition would seem to consist in a peculiarly irritable state of the pulmonary system, or more correctly, perhaps, of the pneumo-gastric nerve. That this nerve is the seat of that peculiar condition which predisposes to asthma, seems probable from the circumstance, that in persons who are subject to this disease, almost all the organs to which this nerve is largely distributed are particularly liable, from slight causes, to functional derangement. Thus, there are few asthmatic subjects, who are not especially liable to gastric disorders; as indigestion, flatulent colic, and gastralgic affections. These facts would appear to show that the pneumo-gastric nerve which presides over the functions of the stomach and lungs is in a state peculiarly susceptible of being thrown into morbid excitement in asthmatic individuals, and that this condition, has probably an important share in forming the predisposition in question.

Authors have divided asthma into various species, founded principally on the different characters of the exciting or proximate causes of the disease. Bree has subdivided the disease into four varieties, namely: 1, those cases that are excited by the irritation of effused serum in the lungs; 2, those arising from a gaseous acrimony in the pulmonary cells; 3, those

resulting from gastric or abdominal irritation; and 4, those depending on habit. This division is, however, altogether arbitrary, as it is manifestly founded on gratuitous principles; for its dependence on an *aereal acrimony* in the lungs, is a mere hypothesis; and the effused serum in the lungs, is an effect probably, and not the cause of the asthmatic paroxysm. It is certain at least, that the difficulty of breathing always commences and continues for some time before the effusion of mucus into the bronchial cells becomes copious. Richter describes no less than eleven species of asthma, founded on the character of its prominent exciting causes, namely: *asthma hypochondricum et hystericum; A. plethoricum; A. urinosum; A. aereum; A. abdominale; A. nocturnum incubus; A. metallicum; A. à causa specifica; A. ex debilitate; A. spasmodicum;* and *A. acutum periodicum millari.*

Some writers assume only three varieties:— the *spasmodic*, the *dry*, and the *asthma* from abdominal irritation. Dr. Good has admitted of but two species, namely: the *dry* or nervous, and the *humid* asthma.

Such divisions do not, however, appear to possess any essential *practical* usefulness; and the mere *dryness* or *humidity* of the cough, cannot, I think, be regarded of sufficient importance to form the basis of a *pathological* distinction. As symptoms, they unquestionably deserve attention; and it is no less proper, in a practical point of view, to attend to the nature of the *exciting causes.* The judicious and careful physician will not, however, require the aid of classification, and subdivisions, to bring these circumstances to his attention; and it may be reasonably doubted whether any distinctions not founded on prominent and essential points of difference, can be usefully admitted into the description and pathology of diseases.

The exciting causes of asthma, are—

1. *Particular conditions of the atmosphere, in relation to its dryness or humidity, electricity, and temperature.* In general, asthmatic individuals breathe easiest in a pure and unconfined air; but there are many who breathe better in the impure atmosphere of populous cities or crowded rooms, than in the fresh and uncontaminated air of the country. Most persons subject to asthma, bear a dry and warm air much better than a cold and humid atmosphere; but here too, the very reverse sometimes obtains in certain individuals liable to this affection. Some suffer most from this disease during the warm weather of summer; whilst others experience its attacks only in the winter, or about the autumnal and vernal equinoxes.

2. *Various irritating matters inhaled into the lungs,* are capable of exciting the disease in persons predisposed to it; such as dust, and the fumes of lead, arsenic, sulphur, nitric acid, tobacco, and other irritating and offensive vapours.

3. *Gastro-intestinal irritation*, from indigestible and irritating articles of food, vitiated secretions, or a loaded state of the bowels, is one of the most common exciting causes of the asthmatic paroxysm. Almost all asthmatic subjects are peculiarly liable to gastric disorders from causes of this kind, and even slight irregularities in diet are apt to give rise to oppressed breathing in individuals of this habit.

4. *The suppression of habitual sanguineous and serous discharges*, frequently give rise to this affection. I have, during the last eight years, occasionally attended an old gentleman in whom the temporary drying up of a long standing superficial ulcer on the left leg has invariably been followed by violent paroxysms of asthma. I have seen an instance in which very distressing asthmatic symptoms alternated with the hæmorrhoidal discharge. The suppression of the menses sometimes gives rise to nervous or *hysterical* asthma.

5. *Metastasis* of rheumatism and *gout*, and of various cutaneous affections, sometimes gives rise to more or less violent asthmatic symptoms. One of my patients, a rheumatic subject, has had several violent fits of asthma during the remissions of his arthritic affection. Mr. Andral mentions an extremely violent case, which was produced by the sudden disappearance of a dartrous eruption. Leeches and blisters were applied to the part where the eruption had disappeared; and the asthma, by this measure, was completely removed in a few days.*

6. *General plethora*, in co-operation with causes that produce strong sanguineous determinations to the lungs, or increase the momentum of the circulation, is particularly favourable to the occurrence of asthma. Individuals of obese and robust habits, florid and full complexions, with large and turgid veins about the neck and head, are especially liable to asthmatic symptoms from over-exertion by exercise, loud speaking, singing, or violent mental emotions.

7. *Cold*, when the body is in a state of free perspiration, and particularly suppressed perspiration of the feet, may excite the disease. I attended a lady about ten years ago, who suffered exceedingly from a protracted and regular paroxysm of asthma, which was brought on by bathing her feet in very cold water. She was subject to profuse sweating of the feet.

8. *Mental emotions*, particularly violent anger and terror, will sometimes excite asthma in those who are predisposed to it.

9. *Particular odours and articles of diet from peculiarity of habit, or idiosyncracy*, may give rise to asthmatic affections in certain individuals. Thus, the odour of *ipecacuanha* has excited the disease in some persons; and instances are mentioned

* Med. Chir. Rev. vol. vi. p. 447.

in which asthmatic paroxysms have been caused by the odour of musk, roses, red beets, fresh hay, and of sealing-wax. (Parry.)

10. But by far the most common exciting cause of asthmatic *symptoms*, is organic affections of the heart and aorta. Ossification of the cardiac valves, hypertrophy, aneurism of the large arterial trunks within the chest, and other organic causes that disturb the action of the heart, are rarely wholly free from symptoms of asthma. It is, generally, in cases of this kind, that we find the disease to alternate with œdema of the extremities, both being merely symptomatic of the cardiac affection.

11. Finally, asthma, like all other paroxysmal, nervous, and spasmodic affections, may continue to recur under the influence of what Dr. Darwin calls association, or that tendency in the animal economy to repeat morbid actions, when once established in the system, without the renewed application of the original exciting cause.

Pathology.—Various and very discrepant opinions have been expressed with regard to the pathology or proximate cause of asthma. Of late years, several French writers* have denied, or at least greatly doubted the possibility of asthma, independent of organic disease within the cavity of the chest. There can be no doubt, indeed, that perhaps the majority of cases of what are usually called asthmatic affections, arise from causes of this kind, more especially from organic cardiac diseases, aneurism of the large arterial trunks, and pulmonary hepatization. The occurrence of purely spasmodic asthma, wholly independent of obvious structural disorder, is, nevertheless, equally unquestionable.

In relation to the immediate cause of the dyspnœa in spasmodic asthma, there are two doctrines which at present divide the sentiments of pathologists. According to some, the suffocative breathing is caused by a *spasmodic* constriction of the air-cells and smaller bronchial tubes, in consequence of which the free admission of air into the lungs is greatly impeded. Others believe, that the oppressed respiration depends on vascular engorgement of the mucous membrane of the bronchia, giving rise, by the tumefaction of this membrane, to a mechanical diminution of the bronchial tubes and cells, and consequent obstruction to the regular intromission of air to the lungs. Laennec, among many others, has adopted the former opinion, and has endeavoured to prove that the bronchial ramifications are furnished with a coat of circular fibres, beginning where the cartilaginous circles terminate. By the spasmodic contraction of these fibres, the air-passages are obstruct-

* Rostan.

ed, and the phenomena of asthma produced. He asserts, that he has "met with many cases in which it was impossible, after the most minute examination, to find any organic lesion whatever, to which the asthma could be attributed. I am convinced," he says, "that the asthmatic paroxysm may be induced equally by the supervention of a fresh catarrh, and by a deranged state of the nervous influence occasioning pulmonary spasm, or an increase of the necessity of respiration, and sometimes by both causes at once. With the exception of the different kinds of catarrh, the occasional attacks of asthma and dyspnœa are almost always of a kind to give occasion to an immediate and evident disturbance of the nervous influence. Of this kind are strong mental emotion; venereal excesses; the influence of light and darkness; retrocession of gout, (a disease which from its mobility and various effects can only be considered a nervous affection;) certain odours, such as those of the tuberose, heliotrope, stored apples, &c.; changes of atmospheric air, electricity, and other less appreciable conditions of the atmosphere."*

Mr. Abernethy appears to entertain a similar view of the nature of asthma. He contends, that one of the principal causes of this disease is a morbid irritability of the mucous membrane of the air-cells. "A man," he observes, "having irritable lungs, may be sitting comfortably enough at the fire-side, but a little smoke comes into the room, and he can breathe no more; he gasps for breath, he cannot enlarge the chest, and he finds the utmost difficulty in respiring; but where is the difficulty? Where is the sensation of pain and contraction? Why in the lungs themselves; the hindrance is there; I believe it is all irritability, and which proceeds from the state of the stomach."† Other writers of eminence have declared it as their opinions, that pure spasmodic asthma depends immediately on a constriction of the air-cells and smaller bronchial ramifications, by which the ingress of atmospheric air is impeded or prevented, and suffocative respiration produced. It has been objected to this doctrine, that we have no evidence of the existence of muscular fibres in the smaller branches of the bronchia and air-cells; but M. Laennec observes, that as such fibres do undoubtedly exist in the larger bronchial tubes, analogy must lead us to admit their existence in the ultimate ramifications. "Besides, it is by no means demonstrated," he says, "that muscular fibre is the only contractible tissue; indeed, the contrary is proved by the fact, that animals of almost a mucilaginous consistence are capable of evident contraction."‡

* On the Diseases of the Chest, last edition, p. 414.
† Lectures, p. 375.
‡ Loc. cit. p. 408.

We are not, however, without direct evidence of the existence of contractile fibres in the minuter bronchial tubes. Professor Nasse of Halle, has published some very interesting experiments on pulmonary contraction.* He asserts, that in the lungs of sheep, he was able, with a good lense, to trace the longitudinal fibres of the internal surface of the bronchia, described by Soemmering and Reiseisen,† into the smallest bronchial ramifications; and by means of the galvanic influence he demonstrated the contraction of these fibres in the most unequivocal manner. Morgagni has very particularly noticed the fibres of the bronchia ;‡ and although their *apparent* tendinous character would seem to oppose the idea of their possessing contractility, yet, we perceive that the contractile fibres of the bladder and uterus, possess a somewhat analogous appearance and structure. From the experiments of Nasse, it appears, that the bronchial fibres possess considerable contractility, that by passing the galvanic influence through the pneumo-gastric nerves, these fibres and consequently the whole lungs, are thrown into a state of contraction ; and finally, that by dividing the par vaga, the power of pulmonary or bronchial contraction is destroyed, and dyspnœa produced.

It is highly probable, therefore, that asthma consists essentially in a peculiar irritation of the pneumo-gastric nerves, in consequence of which the smaller bronchial tubes and air-cells are thrown into a state of spasmodic constriction, by which the regular ingress of air to the lungs is prevented. When we advert to the almost invariable antecedent and concomitant manifestations of functional disorder of the stomach in this affection, we have good reasons to conclude that the nerves which especially preside over the functions of this organ and the lungs, are in a state of irritation or morbid excitement. The suddeness with which the asthmatic paroxysm is sometimes excited by mental emotions and other causes that act directly through the nervous system, and above all, the rapidity with which it is often dissipated by a few full doses of the *lobelia inflata*, are directly and strongly confirmatory of this view of the pathology of the disease. The existence of a constricted state of the ultimate branches of the bronchia, dependent we may presume, on the functional derangement or irritation of

* Undersuchungen ueber die naechste ursache des hustens. Leipzig, 1829, p. 9.

† Ueber den Bau der Lungen.

‡ Extant in tunica intima ceu lacerti quidam insignes ex albicantibus fibrillis compacti. Hi digitos aliquot supra asperæ arteriæ divisionem initium capiunt, et secundum ejus longitudinem dispositi, interstititium illud, quod memorabam, tenentes, ubi ad secundam bronchiorum divisionem pervenerunt, ibi primum solent per omnem undique bronchiorum superficiem ad istorum extrema versus decurrere. Quorum lacertorum usus nunc non existimo.—Adversaria Anatom. Adver. I. § 25.

the pneumo-gastric nerves, appears, moreover, to be confirmed by the good effects which, according to Dr. Chiarenti, result from the artificial insufflation of atmospheric air into the lungs in this affection.*

Dr. Parry, however, considers this opinion of the nature of asthma as being without the least foundation, and ascribes the dyspnœa to great vascular turgescence in the bronchial mucous membrane, by which the smaller respiratory passages are mechanically diminished or closed, until the vessels relieve themselves by a copious effusion of serum. If, however, vascular congestion were the only or principal morbid condition upon which the peculiar symptoms of the disease depend, it would seem extremely improbable, that any impressions made on the stomach would be capable of speedily arresting the progress of the disease; and yet, in a considerable number of instances, I have known violent paroxysms of asthma greatly, and in one case completely, allayed in less than thirty minutes, by the use of the *lobelia*. There can be no doubt, that congestion always takes place to a greater or less extent in the vessels of the bronchia and air-cells, after the development of the paroxysm; but if this congestion were as great as Dr. Parry and others seem to think, is it not very likely that effusions of blood would occasionally show themselves in the expectoration? The mere circumstance of the frequent inordinate secretion of mucus into the bronchia, is no satisfactory evidence that great sanguineous congestion pre-existed in the mucous membrane of the lungs. It is well known, that the process of secretion is wholly under the influence of the nerves, and we do no violence to correct physiological data, in presuming that the effluxion of mucus in question, is determined by the irritation of the pneumo-gastric nerves.

Prognosis.—An attack of spasmodic asthma seldom proves fatal; and although the frequent recurrence of the disease is apt ultimately to give rise to dangerous pulmonary congestions, effusions within the chest, and general exhaustion, it is by no means uncommon to meet with persons of very advanced age, who have been long subject to this disease.

Where asthmatic symptoms are connected with, or symptomatic of organic pulmonary or cardiac disorder, the prognosis is of course always peculiarly unfavourable, for in such cases fatal dropsical effusion into the cavity of the pleura, or the pericardium is almost a never-failing consequence of the disease. Spasmodic asthma, resulting from mental emotions, or some peculiar odour or vapour, is in general less obstinate and protracted than those cases that arise from gastric irritation, or recur from the influence of habit.

* Journal de Progress. Vide Med. Chir. Rev. Jan. 1828.

Treatment.—The treatment of asthma is either merely palliative, or radical, according as we prescribe for the mitigation and removal of the paroxysm, or the prevention of its subsequent recurrence during the intervals of the fits. A great number of remedies and modes of treatment have been recommended for palliating or allaying the asthmatic paroxysm; but the effects of remedies of this kind are extremely variable in differeat cases. Some will do much good in one person, and fail altogether of procuring relief in an apparently similar case in another individual. Nay, the same remedy will in one attack afford speedy relief, and fail entirely in another paroxysm in the same person. (Laennec.)

According to the pathology advocated above, the principal indications of cure during the paroxysm are to diminish the pulmonary congestion, and especially to relax the spasm of the bronchial tubes and air-cells. Where the pulse is active, and the countenance livid, in young and vigorous subjects, blood should be freely drawn; for, although venesection will rarely by itself make any decisive or permanent impression on the paroxysm, its employment is always proper in robust and sanguineous habits, to obviate any evil consequences that might result from the violent pulmonary and cardiac congestion; and as a preparatory measure to the employment of other remedies, Professor Potter of Baltimore, expresses much confidence in the efficacy of blood-letting in asthma. He considers bleeding "not only the most effectual remedy" in strong subjects, but in many instances capable of effecting a radical cure.* Laennec observes, that "we must never omit blood-letting, whenever the lividity of the countenance, the strength of the patient's constitution, or the overaction of the heart, indicate pulmonary congestion; *but we must be careful not to abuse this practice*, which, in general, only produces a temporary advantage." In old persons who have suffered much from the disease, it is not in general prudent to abstract blood. It must be observed, however, that many writers regard this measure as always of very doubtful propriety, and often injurious in its effects. Judging from my own experience, I am not inclined to place much reliance on its palliative effects, although, for the reasons stated above, I have very generally resorted to it, in robust and full habits, without having ever known any ill consequences to result from its employment.

The *narcotics* have been a good deal employed with the view of allaying the asthmatic paroxysm. Laennec has found opium and colchicum the most powerful remedies for mitigating and curtailing the paroxysm. Articles of this kind, he says, may act beneficially, both by lessening the necessity of respiration, and by relaxing the pulmonary spasm. Hyoscyamus and

* Gregory's Practice, vol. i. p. 187, second edition.

stramonium may also be used with considerable advantage in some instances. The latter article, in particular, has done much good in several instances of *habitual* asthma, under my own observation. In one case, a quarter of a grain of the extract given every four hours for two days, suspended the disease entirely for upwards of nine months. The leaves and root of this plant, smoked in a pipe, will sometimes give much ease to habitual asthmatics; and it is said, that when used in this way, it will occasionally mitigate the paroxysms of the complaint very promptly and decisively. I have prescribed it in a few instances in this manner, but never with any particular advantage; and writers have mentioned instances in which it proved decidedly injurious.

In cases attended with catarrhal irritation, and a very copious secretion of viscid mucus into the bronchia, *emetics* will sometimes procure considerable relief. The production of emesis is particularly proper, where the paroxysm comes on soon after taking a full meal. It is not necessary, nor, in general, proper to excite strong vomiting. Dr. Akenside asserts that he has derived as much benefit from nauseating doses of ipecacuanha in this affection, as from full emesis. It is generally admitted, that *ipecacuanha* is decidedly the best article for this purpose. It is said that the union of distilled vinegar and ipecacuanha forms a particularly useful remedy in this disease. Three grains of the latter with three drachms of the former, may be taken every fifteen minutes, until nausea or gentle vomiting is excited.

The vinegar of *squills*, too, has been highly extolled in asthmatic affections, both for its emetic aad expectorant powers. Sir John Floyer considered this preparation as a specific in asthma. He asserts, that he has often prevented the paroxysm by taking a dose of it at bed-time. Dr. Bree, also, places much reliance on the powers of this remedy; and he observes that its efficacy is in proportion to its emetic operation. I have known much relief obtained from this remedy, taken in two drachm doses every half hour until nausea was induced; more frequently, however, not the slightest advantage resulted from its use.

Vinegar is much praised by Bree as a palliative in the paroxysm of spasmodic asthma. He found it more frequently and decidedly beneficial, he says, than any other remedy he has tried. One of my patients, affected with occasional paroxysms of this disease, has in several attacks derived great relief from two or three table-spoonsful of strong vinegar taken at intervals of half an hour, and from inhaling its fumes. In the last two attacks, however, he derived no obvious advantage from its employment.

Bree speaks very favourably, also, of the union of acids and

narcotics as palliatives in the asthmatic paroxysm. He recommends the following formula as an excellent combination of this kind.*

In the asthma of old people, attended with deficient urinary secretion, œdema of the feet, diuretics sometimes answer an excellent purpose. It is in cases of this kind especially, that the squill may be used with benefit. In general, a good deal of advantage may be derived from diuretics in *habitual* asthmatic affections. Dr. Ferriar speaks well of the powers of digitalis, combined with small doses of opium, in such cases; and Dr. Percival asserts, that he has known this combination to produce very favourable effects. A copious flow of urine is always a favourable symptom in this affection.

Some writers (Pringle, Percival) speak favourably of the use of strong coffee in this affection. I have met with a few individuals who derived advantage from its use during the paroxysm. In another person, however, subject to habitual difficulty of breathing, with occasional violent fits of dyspnœa, the use of coffee has, of late years, invariably aggravated the difficulty of respiration.

Expectorants also may occasionally be employed with some benefit in this disease; and, for this purpose, the different preparations of the squill appear to be the best remedy. I have known the following mixture to give much relieve towards the termination of an asthmatic paroxysm.†

Antispasmodics do not often produce any good effects; yet, in slight cases, considerable relief may be obtained from inhaling the vapour of ether; and in old and habitual cases, the aqueous solution of assafœtida has afforded temporary benefit. The only article of this kind which I have found to manifest any particular powers, in allaying the violence of the asthmatic paroxysms, is the root of the skunk-cabbage. (*Symplocarpus fœtida.*)

I have occasionally employed this article in attacks of spasmodic asthma, and in several instances, with much temporary benefit. From thirty to fifty grains of the powdered root may be taken every two or three hours during the paroxysm, according to the urgency and obstinacy of the symptoms.

Of all the remedies we possess, however, the *lobelia inflata*

* R. Tinct. scill. gtt. x.
Acid. nitric. gr. vi.
Extract. hyoscyam. gr. iii.
Aquæ fontanæ ʒiss.
M. This draught is to be repeated thrice daily.

† R. G. Ammoniac ʒi. solve in
Acid. scillæ ℥iss.
Tinct. opii camph. ℥ss.
M. Take a tea-spoonful every hour, in a little clear and strong coffee.

is, I think, decidedly the most valuable in this affection. Within the last five years, I have had an opportunity of witnessing its good effects in four cases, and I can truly say, that in two of these, it acted like a charm. I have known the most violent paroxysm of spasmodic asthma completely subdued in less than thirty minutes by this medicine. It appears to me that ergot does not more certainly act upon the gravid uterus during parturition, than the lobelia upon the pulmonary organs in asthma. I have even found it to mitigate the dyspnœa, which occurs in consequence of organic affections of the heart.

The good effects of a full dose of this medicine are often experienced in the course of ten or fifteen minutes after it is taken. The Rev. Dr. Cuttler, in a violent paroxysm of spasmodic asthma, took a table-spoonful of the saturated tincture. "In three or four minutes," he says, "my breathing was as free as it ever was. In ten minutes I took another spoonful, which occasioned sickness. After ten minutes I took the third, which produced sensible effects on the stomach, and moderate puking, with a kind of prickly sensation through the whole system, even to the extremities of the fingers and toes. Since that time I have enjoyed as good health as perhaps before the first attack."* In a case of spasmodic asthma, in which I employed this tincture during the present summer, the dyspnœa was almost entirely allayed in fifteen minutes after the first dose was taken. I have not found it necessary to give it to the extent of producing emesis, though some evidence of its influence on the stomach, as nausea, is desirable. A table-spoonful of the saturated tincture may be given every ten or fifteen minutes.

A great variety of other remedies have been employed with more or less advantage in asthma. The prussic acid was successfully given by Dr. Oliver and Dr. Granville. *Alkalies*, particularly the carbonate of potash, will be proper where there is reason to suspect acidity of the stomach. Dr. Bree strongly recommends the use of prepared chalk and rhubarb, in combination, in cases of this kind—more especially after the operation of a gentle emetic. The use of laxatives, with some absorbent, will, in general, afford some advantage in habitual cases, attended with dyspeptic symptoms, and torpor of the bowels.

Tonics also, are said occasionally to produce very good effects in protracted cases, attended with much debility and general relaxation. The bark is especially recommended by Sir J. Floyer. During the intervals of the paroxysms much benefit may, no doubt, be derived from this tonic, in individuals of exhausted and relaxed habits; but there are few physicians, I presume, who would venture on the exhibition of this

* Thacher's Dispensatory.

remedy during the paroxysm, except under circumstances especially indicating its employment.

Dr. Chiarenti, an Italian physician, has lately published a statement, by which it appears that the artificial insufflation of atmospheric air, by means of a common bellows, is capable of speedily removing the asthmatic paroxysm. "He introduced the pipe of the bellows into his mouth, (he was himself affected with the disease) and, closing the nostrils, he pushed the air forcibly into his lungs, and with instant relief." He afterwards tried the same means in other cases of this disease, and always with the same happy result.*

Galvanism has of late years been employed with advantage in chronic asthmatic affections, by Dr. Philip and others. The galvanic influence must not, however, be communicated with much force. The two wires of a weak trough are to be attached, one to a piece of metal placed on the pit of the stomach, and the other on the side of the neck, over the *par vagum*.

With the view of preventing the recurrence of the asthmatic paroxysms, recourse must be had to tonics, a regulated diet, a change of air or climate, and regular exercise; and the usual exciting causes of the disease must be carefully avoided. The tonics usually employed are bark, quina, arsenic, and the carbonate of iron. Laennec states, that he has derived much advantage from the latter article, during the intermissions of the disease. Whilst tonics are employed, attention must also be paid to the state of the bowels, and the hepatic functions. An occasional blue pill at night, followed by a gentle aperient in the morning; the use of the tepid shower-bath where the system is relaxed or exhausted, or cold bathing in robust and full habits, together with regular exercise out of doors, change of air or climate, agreeable occupation of the mind, a light and simple diet, and the careful avoidance of the usual exciting causes of the disease, are the most effectual measures for preventing, or postponing and moderating the violence of the attacks. Attention must, of course, be paid to the character of the exciting cause in prescribing for asthma, both with a view to its palliation and radical cure. When the disease is attended with a rheumatic or gouty diathesis, colchicum, diuretics, and opium are especially indicated. When it succeeds the healing up of an old discharging ulcer, blisters and sinapisms to the part are proper. Andral succeeded in curing a violent case by means of this kind. Here diuretics, also, are generally peculiarly beneficial. Where catarrhal irritation has excited the disease, emetics, the warm-bath, squills, and opiates may be resorted to with a good prospect of success; and in cases that depend on gastric irritation, alteratives, the

* Med. Chir. Rev. January, 1828, p. 221.

warm-bath, mild aperients, tonics, and regular exercise are particularly proper. "Among the remedies best deserving notice in asthma, says Laennec, I would mention a mild and spare diet, residence in a more temperate climate, and warm bathing. The first of these measures will be found very beneficial in cases complicated with gastric irritation; the two last are especially indicated in that class of cases which date from the disappearance of cutaneous eruptions, under the use of powerful external applications."*

CHAPTER XV.

WHOOPING-COUGH.

This is unquestionably one of the most remarkable diseases with which we are acquainted. A cough which is highly contagious in its nature—which has its regular rise, progress, and declension—and which completely destroys the susceptibility of the system to a subsequent or second invasion of the disease, is a phenomenon, truly mysterious and striking.

It is maintained by some writers, that whooping-cough is comparatively a modern disease; and some assert that it was first brought into Europe out of Africa, in the 13th century. By consulting the works of the ancients, however, it would seem that this disease was known at a very early period of our science. Hippocrates in the 6th book on Epidemics, and also in the 6th section of his Aphorisms, speaks of a cough, which, from the short description he gives of it, may, I think, be regarded as the same affection which is now known under the name of whooping-cough. The first distinct and comprehensive description of this malady, however, was given by Mezeray, in the year 1414, in his Chronological History of France. Since that time, a great many epidemics of this disease have been circumstantially recorded; and medical literature furnishes us with no inconsiderable number of elaborate monographs on its nature and treatment.

Whooping-cough usually commences with the symptoms of ordinary catarrh. The patient at first experiences some degree of lassitude, headach and sneezing, with a slight hoarseness and occasional oppression of breathing. The sleep is generally disturbed by dreams and sudden starts; the appetite becomes weak, the bowels torpid, and the pulse slightly febrile towards evening. For the first two or three weeks the cough is almost always dry and ringing; and the paroxysms

* Loc. cit. p. 419.

are short and free from that peculiar sound which is called whooping. At the end of this time the disease begins to assume more of a convulsive or spasmodic character, so far at least as the mere cough is concerned. The paroxysms of coughing now come on more frequently, and are of longer duration than previously. The inspirations during the fits of coughing are extremely difficult, slow, and stidulous, and attended with a sense of obstruction or spasmodic stricture of the glottis, rendering the paroxysms distressingly suffocative, and, in a manner, convulsive.

The approach of a fit of coughing is generally announced by a peculiar sensation of tightness in the breast and of titilation in the larynx and præcordia. These circumstances should be borne in mind, for they throw considerable light on the pathology of this remarkable affection. The duration of the fits of coughing is very various. In some instances, the paroxysms are generally over in less than half a minute; in others they last from five to six minutes, and often longer. The spell of coughing at this stage of the disease, is always terminated by the discharge of a large quantity of a viscid mucus; and the patient frequently experiences some pain in the chest, immediately after the cough has subsided. In many cases the cough continues until vomiting comes on, when it is immediately arrested, and the patient is greatly relieved. So violent in some instances is the fit of coughing, that it induces a state of partial insensibility, and a most distressing sense of impending suffocation. Occasionally, the determination of blood to the head is so great during the paroxysm of coughing, that it bursts out from the nose and mouth; and it is not uncommon for children to become convulsed, in consequence of the cerebral compression from this cause. In this aggravated state, the disease usually continues from four to six weeks, before it begins to abate. The declension is always very gradual, continuing commonly from two to four weeks. Fever is not essentially connected with the disease, although in many instances there is a manifest febrile irritation present during some period of the complaint.

Whooping-cough occurs almost exclusively during childhood. I have nevertheless met with two instances of the disease in subjects beyond the 50th year of age, and several in persons between the 30th and 40th year. It is highly contagious, and occurs almost universally in an epidemic form. I have never yet met with a sporadic case of this affection, although it cannot be doubted that such instances do occasionally occur. It would seem as if there existed some latent connexion between the contagions of whooping-cough and measles; for the former frequently prevails most extensively, either immediately previous, or in alternation, or directly after the occurrence of epi-

demic measles.* Spring and autumn appear to be most favourable to the occurrence of whooping-cough, and it is during the wet and variable periods of these seasons too, that the disease is most liable to become dangerous from the pneumonic affections which atmospheric vicissitudes are so apt to produce. As is the case with all other epidemic diseases, considerable diversity occurs in the grade of violence which different epidemics of this affection assume. Some epidemics are so mild that the disease is attended with but little difficulty, and passes by numbers who are still susceptible of it. At other times the disease manifests a violent and dangerous character; and seizes on almost every individual, whether old or young, who has not as yet had the disease.

Prognosis.—Whooping-cough rarely terminates fatally, unless by the supervention of bronchitis, hydrocephalus, pneumonia, cynanche trachealis, apoplexy, or marasmus. As these secondary and superadded affections are, however, by no means uncommon—especially in variable and humid seasons—the disease, upon the whole, deserves to be regarded as one of considerable danger. It would appear to be a vastly more dangerous affection in northern or cold climates, than in the mild and equable regions of the middle and southern latitudes. Rosenstein states, that in Sweden there were 43,393 deaths from this disease between the years 1749 and 1764—and of these, 5832 deaths occurred in the year 1755 alone. (Richter.)

In general, the younger the patient suffering under this disease, the more apt is it to terminate fatally. Cullen observes, that by far the greater number of those who die of this disease, are children under three years of age. When it attacks weak and delicate infants within the first few months after birth, it is always attended with great danger; yet robust and healthy infants, even at this early age, generally pass through the disease without much difficulty or danger.

In children born with a scrofulous diathesis, whooping-cough is exceedingly apt to call the strumous affection into action. Scrofulous ophthalmia, and glandular tumours in the neck, frequently succeed whooping-cough. I know of no disease which is more to be dreaded than whooping-cough, in subjects of an hereditary consumptive habit. Where there is a predisposition to the formation of tubercles, or where these exist in an incipient and dormant state, an attack of whooping-cough will rarely fail to develop phthisis pulmonalis.

In many instances the disease terminates in chronic bronchitis, in which case the expectoration becomes purulent, and symptoms of hectic supervene. This is especially apt to occur when the patient takes cold from exposure to a damp and va-

* Richter, Specielle Therapie.

riable atmosphere—a circumstance which always greatly aggravates the violence and danger of the disease. I have seen but few deaths from whooping-cough which were not attended with bronchitis, purulent expectoration, and hectic symptoms from having taken cold. The matter expectorated in these cases has generally a very peculiar appearance, resembling more a mixture of cream and mucus than any thing else I know.

In some instances an accidental cold will renew the cough, and protract it for several months in a state of great violence after it had nearly disappeared. Cases are often thus protracted for five or six months. When the disease assumes a chronic character, from cold or some other casual circumstance, it sometimes ultimately terminates in hydrocephalus—more especially if the patient is labouring under the irritation of difficult dentition, or in children habitually subject to disordered bowels. Cynanche trachealis, too, not unfrequently supervenes during whooping-cough, and this is most apt to happen in children of robust and full habits, during the early stages of the disease, and is almost always the consequence of cold. The occurrence of cynanche in this affection is attended with the greatest danger.

It is observed by Richter, that a profuse watery diarrhœa coming on suddenly in this disease when pneumonic symptoms attend, is always to be regarded as one of the most dangerous occurrences. Death, he says, often follows such a discharge very speedily. The appearance of aphthæ in the mouth and fauces in the latter period of the disease, is also a very unfavourable sign. Œdematous swelling of the feet and face is not an uncommon occurrence in this affection, and when it takes place towards the conclusion of the complaint, it is rarely followed by unfavourable consequences. When such swellings supervene in the commencement of the disease, however, they portend much danger—more especially if they are accompanied with a turbid, milky urine. (Richter.) Hufeland observes, that the occurrence of some degree of strangury in the advanced stage of the complaint, is generally soon followed by a manifest mitigation of the symptoms of the disease. A sudden cessation of the cough, it has been remarked, is an unfavourable occurrence, and is frequently followed by pulmonary inflammation. In general, the more fever there exists in this affection, the more violent and dangerous it may be considered.

It is asserted by some writers, (Hufeland, l. c. p. 420: Lentin, Memorabilia, p. 36: Jahn Kinderkankn. p. 399,) that children affected with some chronic cutaneous affection, as *tinea*, itch, &c. very rarely take this disease; and if they do become affected with it, almost invariably pass through it in the light-

est manner. This, however, is contradicted by others—particularly by Hoffman and Haase.

Among the affections which are properly called *sequela* of this disease, the following are the principal. Strumous swellings, dropsy, epilepsy, ophthalmia, rickets, general cachexy, aneurism, deafness, dementia, paralysis, and phthisis pulmonalis. I have known most of these affections to occur as consequences of whooping-cough; and of these, epilepsy, struma, phthisis pulmonalis, and ophthalmia appear to be the most common. When these and other consequences are taken into view—and they are by no means uncommon—we cannot but regard this disease as always one of very serious import. Whooping-cough is indeed as much to be dreaded on account of the many affections which are apt to supervene during its course, or to remain after its disappearance, as for its own proper power, however violent it may be. When perfectly free from any adventitious complications, it cannot be regarded as a disease of much danger, unless in very young and feeble subjects.

Cause.—There exists no other cause, so far as we know, capable of producing this affection, than the peculiar contagion which is generated by the disease itself. Richter observes, that besides this contagion, cold in conjunction with humidity also, may give rise to this affection. For this opinion there do not exist, however, any good grounds; and it seems to me just as improbable as that small-pox or measles should arise from accidental causes. It may be said that all these diseases must have primitively originated from accidental causes—because the first case could not have arisen from a contagion generated by the disease itself. Nothing, in truth, is more mysterious and incomprehensible than the origin of those diseases which we now find to be engendered and propagated by a specific agent alone, elaborated by the living body actually suffering under the disease. The only solution we can offer, and it is indeed vague enough, is, that in the infinite combinations which the material elements of the universe are capable of forming, agents may have been evolved by a peculiar concurrence of circumstances, which had the power of originating these affections in the human system. It is in this way alone that we can give any plausible explanation of the occasional rise of new diseases—which when once originated, propagate themselves by elaborating their own specific causes. Whatever may be our speculations in relation to this curious and interesting subject, the cause of whooping-cough is undoubtedly in all instances a specific contagion.

Riverius, Linnæus, Dessault, Rosenstein, and more recently Clesius, maintain that whooping-cough is produced by the inhalation of microscopic animalcula.

Whooping-cough does not appear to possess a contagious

character until it has made considerable progress, (Richter;) or until the second or convulsive stage has supervened. The contagion of this disease, although very active, does not extend far from the body of the affected person. It is accordingly almost always prevented by separating the healthy from the affected portion of families.

Autopsic phenomena.—The appearances discovered on post-mortem examination are various and often quite contradictory. Much diversity must necessarily result in this respect from the various accessory affections which are so common in this complaint, and the different periods of the disease in which death occurs. We cannot, for instance, expect to find the same post-mortem appearances in a case which terminates fatally in consequence of pneumonia, as in one in which death occurs from apoplexy; nor is it reasonable to presume that there should be much uniformity in the autopsic phenomena, where the immediate cause of death is so various, or dependent on such a diversity of accidental affections. As the respiratory organs are the parts most obviously implicated in the disease, the principal attention of pathologists has of course been always directed to them, for a solution of the pathological character of this affection. Many writers speak particularly of the frequency of traces of inflammation in the mucous membrane of the *bronchia* and *larynx*. Strong, Cullen, Astruc, Lettson, and Danz, mention these appearances as by far the most common; and more recently, Whatt and Marcus have adduced striking instances of this kind. The former lost three of his own children by this disease, and in each the marks of previous inflammation in the mucous membrane of the bronchia, were very conspicuous throughout its whole extent. Marcus gives but two dissections in which bronchial inflammation was discovered; and in one of these a considerable quantity of pus was found in the air-passages, the smaller branches of which were in the most intense state of inflammation, approaching in some parts to gangrene.

In some instances, the lungs have been found exceedingly congested, and the air-cells choaked up with an extremely viscid mucus, without any traces of bronchitis whatever. Lobenstein-Loebel relates an instance in which a considerable portion of the diaphragm was covered with a number of small pustules containing a purulent fluid.*

After all, it is incontestible, that in many cases of death from this disease, no morbid appearances whatever are discovered on dissection, and there are good grounds for believing, that the inflammation and other phenomena which have been detected

* Richter's Specielle Therapie.

on post-mortem examination, have no essential connexion with the disease, but are altogether adventitious or secondary.

Proximate cause.—The opinions that have been advanced, concerning the nature or proximate cause of this disease, are extremely various and contradictory. Hoffman considered it as depending on an acrid serum in the lungs. Sydenham ascribed it to the effects of irritating effluvia, cast off from the blood into the lungs in consequence of the suppression of the insensible transpiration by the skin, from cold and damp air. *Huxham* and others placed the primary seat of the disease in some morbid condition of the intestinal canal; *Butler*, in the liver; and some have considered it, as the consequence of gastric irritation, or, according to Stoll, of crude and bilious matters in the stomach. The opinion which appears to be most prevalent, at the present day, is, that the disease depends on a peculiar bronchial inflammation; and this doctrine would seem to receive much support from the appearances which are occasionally detected in the mucus membrane of the bronchia and trachea on post-mortem examination, as well as from the febrile movements which, in most instances, attend the disease. As, however, ordinary bronchial inflammation does not excite the train of symptoms which characterize this disease, the advocates of this doctrine are forced to assume the position, that the inflammation in question is of a specific kind, capable of exciting the peculiar convulsive cough which distinguishes the disease. Whatever plausibility this doctrine may seem to possess on a superficial view of the subject, strong, and in my opinion, insurmountable objections may be urged against its validity. It is true indeed, that fever is no uncommon attendant of this disease, and that unequivocal traces of inflammation are sometimes manifested on post-mortem examination. It is, nevertheless, equally true, that in many instances no febrile symptoms whatever occur during the early period, and occasionally none during the whole course of the disease; nor are the signs of previous inflammation in the respiratory passages always manifested on autopsic examination. That inflammation must frequently supervene in the trachea and bronchia in a disease in which the lungs are so violently and frequently agitated as they are in the present one, is indeed to be expected. Besides this accidental source of pulmonary inflammation in whooping-cough, there can be no doubt, that the lungs are especially predisposed, by the same circumstance, to the injurious influence of atmospheric vicissitudes, and consequently to the supervention of pulmonary catarrh, or bronchial inflammation.

From these circumstances, we have the strongest grounds for believing that the inflammation which is frequently detected on dissection in the mucous membrane of the respiratory

passages, is always accidental, and by no means essential to the perfect development of the disease. It may be observed, moreover, that bronchial inflammation is probably far from being so common in this disease, as one might be led to think from the appearances discovered on dissection; for it must be recollected, that death occurs chiefly in such instances only as are attended by unequivocal symptoms of inflammation, and we may, therefore, reasonably expect to find traces of inflammation in such cases, although in the milder instances no such inflammatory condition may exist. If, however, bronchial inflammation be the proximate cause of the disease, it must, necessarily, be present in all cases, in the mild as well as in the violent instances of the malady, a circumstance which is decidedly contradicted by almost universal observation. The only dissection I ever witnessed of a subject that had died of this disease, presented no evidence of the existence of previous inflammation in the bronchia. This patient died suddenly of convulsions during a violent paroxysm of coughing. That inflammation of the mucous membrane of the bronchia, is not essential to this disease, or its proximate cough, is proved moreover by the fact, that bronchitis is rarely, if ever, attended with a violent cough, much less with that peculiar cough which distinguishes this disease. Bronchitis, too, in its acute form, is always rapid in its course, and is attended with strong fever and a continued sense of tightness and oppression in the breast. In the chronic form, the expectoration is invariably purulent and entirely distinct in its character from the ropy and transparent mucus which is expectorated in whooping-cough. It is also almost invariably attended with the usual symptoms of hectic fever. When cough depends on acute inflammation of the respiratory passages, it almost always begins to decline as soon as the secretion of the bronchial mucus becomes copious. In whooping-cough, however, the reverse very generally obtains. During the first few weeks, there is seldom much mucus secreted in the bronchia; but as soon as this secretion becomes more abundant, which occurs after the second or third week, the cough also acquires much more violence, and especially that convulsive character which distinguishes it from other varieties of cough. Very commonly, moreover, the slight symptoms of fever which accompany the development and first few weeks of the disease, vanish entirely in the second stage, when the cough becomes more spasmodic and violent in its paroxysms. (Richter.) This circumstance most assuredly does not favour the idea, that the disease is of an inflammatory character; for if this were the case, the cough, one should think, would decline with the fever; instead of which, it is always found to acquire much more violence.

It appears to me that whooping-cough is essentially a spasmodic or nervous affection, the proximate cause of which consists probably in a peculiar irritation of the eighth pair, or the pneumo-gastric nerves.

If we attend closely to the phenomena which immediately precede and accompany a paroxysm of whooping-cough, we cannot but perceive unequivocal manifestations of a purely spasmodic condition of the respiratory apparatus. The sense of stricture in the breast and of the glottis, which is felt immediately before the fit of coughing—the sudden and convulsive character of the cough—the peculiar constrictive feeling in the præcordia—the stritulous respiration, all point to a spasmodic state of the pulmonary system. That the irritation which calls forth the convulsive action of the diaphragm, and the other parts immediately concerned in the act of coughing, is seated in the eighth pair of nerves, may, I think, be inferred from the known agency which these nerves have in the production of the various phenomena manifested by the repiratory apparatus. The interesting experiments of Professor Nasse, also afford strong support to this opinion. In a series of experiments, instituted for the purpose of elucidating the pathology of cough, this experimenter found, that on bruising or strongly pinching the par vagum so as to break down its structure, a violent convulsive cough was invariably excited. By injuring in the same manner the *diaphragmatic* nerve, no such effect ensued. According to these experiments, the act of coughing is performed almost wholly by the sudden spasmodic contractions of the diaphragm. By opening the abdomens of various animals and exposing the lower surface of this muscle, he saw distinctly its violent convulsive contractions during the cough, which was excited by bruising, with a pair of forceps, the pneumo-gastric nerves. The peculiar tone of the cough, and the sense of constriction which is felt at the glottis, may arise from the irritation extending to the recurrent branches of the vagus nerve; and that this irritation is peculiar or specific in its character, may be inferred from the nature of its exciting cause.

Treatment.—It is very generally believed, that whooping-cough, though susceptible of much mitigation, is wholly uncontrollable in its progress, and that no treatment is capable of materially shortening its course. This, I am persuaded, is an unfounded opinion. Sydenham, Werlhof, Hufeland, and several later German, Italian, and French writers, admit that it may be arrested in its course; but it is asserted, that this can never be done before the fourth week after its commencement. (Richter.) Be this as it may, my own experience does not permit me to doubt of its susceptibility of being curtailed in its progress; and many well authenticated observations in confirmation of this fact might be collected from recent publications.

Although inflammation and fever do not constitute essential conditions of this disease, yet blood-letting may often be employed in the first stage of the disease with manifest advantage. An unusual or preternatural momentum of the circulation is not to be regarded as a harmless circumstance, even in diseases strictly spasmodic. Whatever may be the essential character of a disease, if the pulse is full and active, blood-letting may be regarded as proper, and its employment will generally be productive of some benefit. In the present disease, if the abstraction of blood should even afford no direct advantage over its characteristic symptoms, it tends materially to lessen the danger which may result from the violent cephalic congestions during the paroxysms of coughing, as well as to diminish the liability to the accidental supervention of inflammation. In cases attended with bronchial or pneumonic inflammation, bleeding is obviously indispensable; and should be employed promptly and decisively, both in a general and *local* way. To tamper with the ordinary remedies in cases of this kind, would be exposing the patient to great danger; for, when inflammation supervenes, it is this, and not the original disease which claims our principal attention, since the danger and obstinacy of pulmonic inflammation must be especially great in an affection, which, like the one under consideration, keeps up so constant and violent an irritation of the respiratory organs, by the frequency and violence of the cough. *Leeching* on the breast, is particularly valuable in cases of this kind.

The extensive sympathetic relations which subsist between the intestinal canal and the various organs of the body, cause it to participate, in a greater or less degree, in almost every form of disease to which the human system is liable. Whatever be the nature of the malady, and in whatever system of structure it may be principally located, the alimentary canal, sooner or later suffers functional disturbance, giving rise either to a remora of its recrementitious contents, or to a vitiated secretion of the fluids which are poured into it. These latter consequences become in their turn sources of intestinal irritation, and I need not say how great a tendency such irritation has to aggravate and sustain diseases, whatever may be their original source or character.

The bowels are almost always in an unnatural condition in whooping-cough. The evacuations are sometimes bilious, or almost wholly mucous; and, in many instances, dark and exceedingly offensive stools are passed. In prescribing for whooping-cough, it is of much consequence, therefore, to attend to the condition of the bowels, and to keep them in a moderately loose state throughout the whole course of the disease. Very active purging, however, is improper, as it tends to increase, rather than to moderate the intestinal irritation when fre-

quently repeated. A grain or two of calomel in the evening, with a small dose of rhubarb on the following morning, will in general answer very well for this purpose. Where there is considerable febrile irritation present, small doses of the sulphates of sodæ or magnesia may be preferable.

Emetics constitute an important class of remedies in the majority of pulmonary diseases. They are especially indicated in those affections of the respiratory organs, in which there is an abundant secretion of bronchial mucus. Much of the suffocative distress experienced by patients affected with whooping-cough, arises from the large quantity of viscid mucus which is lodged in the trachea and bronchia; and it is chiefly by effecting the discharge of this impediment to free respiration, that emetics prove serviceable in this disease. It is not improbable, however, that a part of their beneficial operation may depend also on the impression which they produce on the pneumo-gastric nerves in the stomach. They are particularly useful in the hooping-cough of infants; these are unable to throw off the viscid mucus that clogs the respiratory passages; and instances of death by suffocation from this cause have frequently occurred. When, therefore, the cough in very young children is violent, and attended with symptoms of impending suffocation, an emetic should be immediately administered; or the fauces irritated with a feather, so as to bring on speedy vomiting. In cases of this kind, the sulphate of zinc will generally answer better than any other article, from the promptitude of its operation. It must nevertheless be observed, that the very frequent repetition of emetics, more especially antimony, is apt to bring on much weakness and irritation of the stomach, which may have a permanent injurious influence on the future health of the patient. I have in general preferred the ipecacuanha to every other article of this kind. Dr. Fothergill speaks very highly of the following combination as an emetic in this affection.

R. Pulv. chel. cancror. ʒss.
Tart. antimon. gr. ii.
Misce.

Of this 1, 1½, or 2 grains may be given at a dose, according to the age of the patient. It has been supposed that the union of some absorbent with the emetic is peculiarly beneficial in this affection. The syrup of squills also forms an excellent emetic in very young patients. I have frequently prescribed this preparation, in union with a small portion of antimonial wine, with a very good effect. We may also prescribe the antimonial wine in union with an emulsion of assafœtida, with much advantage as a palliative.

The *narcotics* furnish us with several very valuable reme-

dies for the treatment of this disease. Of these the *belladonna* is the most celebrated, and unquestionably by far the best article of this kind we possess. Professor Borda, who, I believe, was the first who employed this remedy in whooping-cough, speaks of its powers with unqualified praise. He asserts, that in a number of instances he has found it to remove every vestige of the disease in ten or twelve days; and that where it did not remove the disease entirely, it rarely failed to mitigate it very considerably. He observes, moreover, that he has known cases which appeared to be beyond the hope of recovery, restored by this remedy. The observations of Hufeland and Alibert, not to add the testimony of many other writers, speak in terms nearly equally favourable, of the virtues of this narcotic in the present disease. A large mass of incontestible evidence might be adduced from the current medical publications, illustrative of the valuable powers of the belladonna in this singular malady. From my own experience, I can testify with confidence to its virtues as a remedy in this affection. I have within the last six years prescribed it in perhaps twenty cases, and in the majority of them with manifest advantage. Since the publication of my work on the materia medica, my good opinion of the value of this remedy has been considerably increased. In two cases it arrested the complaint almost wholly in the course of *eight* days, although the disease was in both instances exceedingly violent. It does not appear, however, to answer any useful purpose in cases that are attended with fever and brochial inflammation. In instances of this kind the lancet with blisters, or tartar emetic ointment rubbed on the chest, are the means upon which our reliance must be almost entirely placed. In the purely spasmodic form of the disease, however, and where all symptoms of inflammation are absent, it is often singularly efficacious.

The extract of conium, lactuca virosa, hyoscyamus, and opium, have also been favourably mentioned as palliatives in this disease. Dr. Butler states, that he has frequently used the following mixture with marked benefit.* *Opium* is objectionable, both on account of its constipating effect, and its tendency to determine the blood to the brain. Some writers recommend the *tincture of cantharides*.† Dr. Sutcliff asserts, that when given to the extent of producing strangury, it will sometimes, in a great measure, remove the disease in four or five days. This practice has also been pursued with success

* R. Extract. conii gr. iii.
Magnes. sulphat. ℈i.
Aq. carui ʒv.
Syrup. rhæd. ʒi.
M. Take 30 drops three times daily.

† Armstrong, Chambers, Millar, Buchholtz, Loder, and others, speak much in favour of this remedy in whooping-cough.

by Hufeland, and Lettsom speaks very favourably of it. Sutcliff used it according to this formula.* M. Fresnoi asserts, that he has used the extract of the *rhus vernix* with much success in this disease. He gave half a grain, with half an ounce of syrup, every three hours.

Antispasmodics are frequently prescribed in whooping-cough, and sometimes with temporary advantage. An aqueous solution of assafœtida will occasionally palliate the symptoms considerably, in cases unattended with fever or strong pulmonary irritation. This article answers the double purpose of an expectorant and an antispasmodic. I have, in a few instances, known very material relief obtained from a mixture of the vinegar of squills and an emulsion of assafœtida.

Expectorants also will occasionally mitigate the violence of the symptoms. Dr. Pearson strongly recommends the following mixture, and I have myself known it to give much temporary relief.†

Tonics may, in some instances, be used with much benefit in whooping-cough. The Peruvian bark is particularly extolled by Dr. Cullen as a remedy in this disease; but its good effects are in a great degree confined to the latter stages of the disease. In some instances, the cough assumes a chronic character—continuing long after the usual period of its termination; and these cases are frequently connected with chronic brochitis. If they are not subdued by efficient measures they gradually undermine the constitution, until the system is worn down, and the patient dies in a state of marasmus, or under symptoms of phthisis pulmonalis. In such cases, strong doses of cinchona, or quinine, are often peculiarly servicable. This tonic may also be very beneficially used in cases of a purely spasmodic character, where the disease becomes protracted and kept up by habit.

Among the mineral tonics, *arsenic* has been most commended for its powers in this affection. It is, however, wholly inadmissible in cases attended with febrile irritation or bronchial inflammation. Dr. Ferriar placed much reliance on this remedy in cases free from fever. He asserts, that according to his own experience, "arsenic is the only remedy which promises

* R. Tinct. peruv. spirit. ℥i.
Tinct. opii. camphor. ℥ii.
Tinct. cantharid. ℥ii.
Two drachms of this mixture is to be taken thricc daily.

† R. Aq. fontanæ ℥i.
Syrup. ʒiii.
Subcarbonat. sodæ gr. xxv.
Vin. ipecac. ʒi.
Tinct. opii gr. vi.
M. The sixth part, every four or five hours, is the proper dose for a child between one and two years old.

to shorten the disorder effectually. I have," says he, "employed this article in several cases of infirmary patients with tolerable success; and I have occasionally given it in private practice with so much advantage, that I think it deserving of farther trials." I formerly employed this remedy frequently; and in some instances its good effects were very obvious. The proper dose for a child between one and two years old, is two drops of Fowler's solution twice or thrice daily. I have usually given it in union with small doses of the extract of belladonna, or conium.

The *lobelia inflata* has proved an excellent remedy in my hands, in whooping-cough. Within the last four years, I have prescribed this article in a very considerable number of cases, and very generally with some advantage, and in several instances with the most decided success. It not only often mitigates the violence of the coughing, but it has appeared to me very obviously to shorten the course of the disease in several cases. I have usually given the saturated tincture in union with the syrup of squills, in doses of ten drops of each, four or five times daily, to a child about two years old. To several children about this age, I gave as much as twenty drops of the tincture of lobelia, and I have always found it strongly palliative when it excited sickness or slight vomiting.

External rubefacient or revulsive applications, are particularly valuable in cases attended with bronchial inflammation, or strong and dangerous sanguineous congestions in the head. Dr. Gregory advises frictions with the following embrocation along the whole tract of the spine, and over the chest.* Frictions with *tartar emetic ointment* over the præcordial region, will in many cases make a powerful impression on the disease. This practice originated with Autenreith, and has been much employed by the German physicians. When the disease is complicated with pneumonic affections, blisters and rubefacients, in conjunction with venesection, and especially *leeching* on the breast, are indispensable.

When the disease becomes complicated with chronic bronchitis in the advanced stage of its course, the *balsam copaiva* is a very valuable remedy. I have in a few cases of this kind prescribed this article with the most decided benefit; and I know, indeed, no other remedy that promises so much as this one, where chronic bronchitis attends.

Various inhalations, also, have been extolled for their good effects in this disease. The nitrous acid vapour, and the fumes

* R.—Antimon. tart. ℈ii.
Tinct. cantharid. ℥i.
Aq. rosar. ℥ii.—M. The tartar emetic is to be dissolved in the rose water, and then the tincture of cantharides added to it.

of tar, have been particularly recommended for this purpose. I have employed the nitrous acid vapour in a few cases with much benefit.

Dr. Gregory states, that he has derived great benefit from small doses of calomel, (a grain twice a day) with a few grains of scammony in the latter stages of whooping-cough, attended with symptoms of marasmus.

Change of air and exercise by gestation generally have an excellent influence in tedious and obstinate cases, attended with much exhaustion. In instances of this kind, a change of air, says Dr. Gregory, "is often the only thing that gives the patient a chance of life." I have seen one very remarkable recovery effected by removing the patient into the country, and the free use of a milk diet. In cases attended with bronchial inflammation, this measure is inadmissible, as it rarely fails to aggravate the symptoms immediately.

The diet should be light and digestible, and it is particularly important to guard the patient against the influence of a cold, variable, and damp atmosphere.

CHAPTER XVI.

ASPHYXIA.

The term asphyxia is here used to designate two varieties of suspended animation; namely, those cases which result from the total suspension of the function of respiration, by preventing the ingress of atmospheric air to the lungs, or by breathing an air incapable of converting venous into arterial blood; and those cases of apparent death which result from the temporary destruction of the sensibility and irritability of the system by the influence of certain external causes.

The first variety includes those cases that are produced by hanging, drowning, or strangulation; and by the inhalation of carbonic acid or some other irrespirable gas. The second variety embraces the cases that are produced by a stroke of lightning or electricity, and by the protracted influence of intense cold.*

1. *Asphyxia from drowning.*—When a person who has been submersed in water until all manifestations of life are destroyed, is taken out, the face exhibits a turgid and livid appearance; the eyes are open and staring; the limbs somewhat stiff; the

* Good's Study of Medicine, vol. iii. p. 367.

tongue usually thrust a little beyond the teeth; and in most instances, the epigastrium is tense and tumid.

Considerable controversy has existed concerning the mode in which drowning causes death. Many have contended that suffocation is produced by the water rushing into and filling up the cavity of the lungs. Haller, P. Frank,* Louis, and Portal† mention cases in which the lungs were charged with an abundance of water, sometimes frothy and bloody. On the other hand, however, it has been satisfactorily ascertained that in many instances of death from drowning, very little, or no water whatever, gains admission into the lungs. Tissot,‡ Goodwin,§ Kite,‖ Roesler,¶ and many other later writers, have published numerous observations in testimony of this fact; and it is now, I believe, universally admitted, that so long as the larynx retains any degree of irritability, no water can enter into the respiratory passages; and, consequently, that whenever water is found in the lungs, it must have entered into them after life was destroyed. Such is the peculiar sensibility of the respiratory passages, that the moment water or any other substance not in harmonious relation with them, comes in contact with the mucous membrane of the larynx, the glottis is instantly thrown into a state of spasmodic constriction, which wholly prevents the ingress of the irritating fluid into the trachea. When the sensibility and contractibility of these parts are extinguished, however, the water may gain admission into the lungs, and hence it is not uncommon to find more or less of this fluid in the air passages in those who have lain a long time under water.

Some have supposed that drowning destroys life by apoplexy —that the functions of the brain are at once destroyed by strong vascular congestion and extravasation. Portal** who entertained this opinion states, that he found the vessels of the brain, as well as the right auricle and ventricle of the heart, jugulars, and descending cava, exceedingly turgid with blood in subjects that had died by drowning. This opinion is also advocated by Littre, Kite, Walter†† and Boerhaave. On the contrary, however, many observations have been published, which go to show that vascular congestion within the head,

* System ein. Vollstaendiger Med. Polizei, vol. i. p. 186.

† Instruction sur le Traitment des Asphyxiés.

‡ Avis au Peuple, p. 426.

§ On the Connexion of Life with Respiration, &c. p. 14.

‖ An Essay on the Recovery of apparent Death.

¶ Diss. Inaug. &c. See Ed. Med. and Surg. Jour. No. lxxxii. Dr. Roesler states, that in forty-five experiments he made on animals, he did not in a single instance find any thing more than a very small portion of frothy mucus about the bifurcation of the trachea.

** Loc. citat. See also Observ. sur les Effects des Vapeurs Mephytiques.

†† De Morbis Peritonei et Apoplexia.

though an occasional, is by no means a common or general phenomenon. Champreaux and Faissole assert, that they found no marks whatever of unusual sanguineous congestion in the brains of persons who had died by submersion.* Schrage,† and Kuehn,‡ state that they even found the vessels of the brain almost entirely empty. Fothergill, in a number of experiments made on animals with a view of illustrating this subject, fully confirms these observations;§ and Dr. Curry states, that in every instance he examined, he found the vessels of the brain entirely free from distention. In nearly all instances, however, the lungs are strongly engorged with blood, and the bronchial tubes generally contain more or less of a frothy and bloody mucus.

Bichat has given a very interesting and satisfactory explanation of the mode in which death is brought on by submersion, and other analogous causes of asphyxia. When respiration is interrupted, the blood ceases to undergo the necessary chemical changes in the lungs; and black or venous instead of florid and arterial blood, is immediately sent to the left side of the heart, and thence throughout the system. Now it is well ascertained, that the regular transmission of arterial or red blood to the brain, is indispensable to the performance of its functions; and therefore, one of the first effects of interrupted respiration towards the destruction of vitality, is a cessation of cerebral action for want of red or arterial blood to excite the brain. The direct and instantaneous consequence of this cessation of cerebral action is cessation of animal functions, from want of excitement in the organs of these functions by the nervous influence and the red blood; and from the same causes the heart soon ceases to act, and the circulation stops. Death from asphyxia, by submersion, strangulation, or the inhalation of mephitic gases, commences therefore in the *brain*, and those vital actions that are immediately dependent on the exercise of its functions,—namely, sensation, voluntary motion, thought, and the mechanical effort of respiration, cease a short time before those actions which constitute what are called the organic functions, that is, the circulation, absorption, exhalation, &c. are obliterated.‖

Much difference of opinion has been expressed with regard to the time a person may remain under water, in a state of asphyxia, with sufficient vitality remaining to afford a chance of being resuscitated by proper restorative measures. Mr. Brodie thinks it extremely improbable that resuscitation can be

* Erfahr u. Warneh Ueber d. Ursach d. Todes bei Ertrunk. Danzig, 1772—as quoted by Richter.

† Diss. de Submersi—179.—Richter, Sp. Therap.

‡ Diss. de Causa Mortis Submersorum.—Richter, Sp. Ther.

§ A New Inquiry into the Suspension of Vital Actions, &c.

‖ Bichat on Life and Death, p. 136.

effected after the heart has ceased to act; and this he supposes, always occurs within a few minutes after the cessation of the respiratory function. Dr. Paris, and other late writers have expressed the same sentiments on this point. Unless, however, we reject no small amount of evidence from sources of unquestionable credibility, we are forced to admit that there is in some instances a possibility of resuscitation after a much longer period of submersion, than Mr. Brodie and Dr. Paris are willing to allow. The experiments that have been performed on animals in relation to this point, afford us no satisfactory results. Dr. Davy informs us that he has never been able to resuscitate dogs after having been under water *two* minutes; and Dr. Colhoun of this city states, that in some experiments he made on cats, "they invariably died after six minutes of submersion."* Dr. Roesler asserts, that he succeeded in resuscitating two rabbits, one after 5¾, and the other after 9½ minutes submersion; and a cat after having been submersed 11¾ minutes. He observes, however, that he "several times failed when the animals were taken out of the water instantly after they seemed to have expired." Experiments on inferior animals cannot, however, furnish us with any certain data with regard to the human subject. We learn, nevertheless, from these experiments, that very considerable diversity occurs as to the time that animals may remain under water and still retain sufficient vitality to render resuscitation possible. We see it vary in the same species of animals, and in experiments conducted under precisely the same circumstances, from a few to ten or eleven minutes; and we cannot doubt that a corresponding diversity occurs, in relation to this point, in the human subject. Instances of resuscitation after a period of submersion varying from fifteen to thirty minutes are on record; and although doubts have been expressed with regard to the accuracy of these statements, we can scarcely with propriety permit our scepticism on this point, to carry us so far as to reject positively the testimony upon which they are made. That such instances of recovery are, however, extremely rare, is sufficiently evident from the fact that the possibility of resuscitation after such protracted periods of submersion, is now very generally doubted.

Various circumstances may contribute to hasten or retard the complete destruction of vitality from drowning. Submersion in very cold water will no doubt destroy life sooner than when the water is warm or near the temperature of the body; for in the former case the animal temperature will be much more rapidly and completely abstracted than in the latter. Previous debility from disease, spasms and convulsions, injuries sustained in falling into the water, asthma, an apoplectic

* Gregory's Practice, second American edition, p. 247.

predisposition, intoxication, torpor from excessive cold, an overloaded stomach, &c. may all have a tendency to lessen the chance of resuscitation from asphyxia by submersion; and it is not improbable, moreover, that some diversity may exist in different individuals as to their respective powers of vital resistance under similar circumstances of submersion.

The morbid appearances observed on dissection in persons who have died by drowning or strangulation are: turgescence of the jugulars, vena cavæ, right auricle and ventricle of the heart, pulmonary arteries, and of the pulmonary vessels. The left auricle and ventricle are generally empty and flaccid; and in some instances there is considerable vascular congestion in the brain, but very rarely so much as to justify the belief that any apoplectic torpor proceeded from this cause. In nearly all instances a considerable portion of water is found in the stomach, but the lungs very generally contain very little, or no water whatever.

Inquiries have been made to discover some mark by which we may decide whether dead bodies found in water have died by drowning, or whether they have been thrown into the water after they had been deprived of life. Mr. Orfila has paid particular attention to this subject, and has examined in detail all the indications that have been mentioned as available guides in making up a judgment on this point. According to his observations, more or less water always enters into the stomach when death occurs by drowning, but never when the *dead* body is thrown into water. The result therefore of his inquiries on this subject is, that the only certain sign of submersion during life, is the presence in the stomach and respiratory passages of water similar to that in which the submersion took place; provided that it has not been injected into the stomach after death, and that the water in the lungs is found in the ultimate ramifications of the bronchia; and provided, also, that the body was not found in a vertical position. The presence of a frothy fluid in the air-passages, he says, is only to be regarded as a presumptive evidence of submersion during life, and this is strengthened by the appearance of an unusual portion of water in the pulmonary tissue, since this fluid never penetrates so deeply after death, as during life, by the efforts of respiration. The absence of a frothy mucus in the respiratory tubes does not, however, afford any proof that death did not occur by submersion.*

Treatment.—When a person is taken out of water, and it may still be deemed proper to make attempts to effect resuscitation, he should be immediately well dried and wrapped in blankets, and conveyed to a place convenient for the necessary

* Revue Medicale, tom. xiii. p. 347.

applications. The principal object to be aimed at, is a restoration of the action of the lungs, at the same time that warmth is gradually communicated to the body.

With this view, artificial inflation of the lungs has always been regarded as the most important resuscitating means we possess in cases of this kind. The inflation may be made by blowing in the air through a tube in the mouth, or by a common bellows, whilst the nostrils are held close, to prevent the return of the air by that channel. It is to be particularly recollected, however, that very forcible inflation is calculated to defeat our purpose, even in cases where the chances of resuscitation may be presumed to be considerable. M. Leroy d'Etiolles has recently paid particular attention to this subject, and has strongly set forth the injurious consequences of forcible insufflation into the lungs in asphyxia. Leroy, Duméril, and Magendie, have ascertained by repeated experiments, that sheep, foxes, deer, rabbits, &c. may be speedily killed by rapid and strong inflation of the lungs, even when the insufflation is made with the mouth. When air is forcibly thrown into the lungs, it may lacerate the delicate structure of the air-cells and cellular texture of the lungs, and thus destroy all possibility of restoring the pulmonary functions; for it appears from experiments performed by the same gentlemen on dead human subjects, that the pulmonary tissue may be readily ruptured by forcible inflation.* In endeavouring to restore the action of the lungs, the air should therefore be but moderately forced into the trachea—alternating the acts of inflation with compression of the thorax and abdomen, so as to imitate the mechanical process of respiration. M. Leroy proposes to introduce two fine needles so as to penetrate the edge of the diaphragm, and to pass a gentle current of galvanism through this muscle. This has been practised on inferior animals in a state of asphyxia, with complete success, after more than five minutes of submersion. The galvanic circle must be alternately interrupted and closed, so as to imitate the act of respiration. Whenever the circle is closed, the diaphragm contracts, and enlarges the thoracic cavity, and the air is drawn in; on taking off the communicating wires, the diaphragm resumes its former position, and expiration takes place. The practice of compressing the chest and abdominal parietes in alternation, with gentle insufflation, is particularly recommended. By this method the blood in the vessels of the abdomen and breast is put in motion, and propelled towards the heart and lungs, and the contractibility of the diaphragm is excited.

At the same time that the efforts to carry on artificial respira-

* Rapport sur un Mémoire de M. Leroy d'Etiolles, relatif à l'Insufflation du Paumon, &c.—Revue Medicale, vol. xiii. p. 328.

tion are made, heat should be gradually communicated to the body, by wrapping it in dry and warm flannel, and by applying heated cloths, or warm bricks wrapped in flannel, or bottles filled with warm water to the lower extremities and body. Care must be taken, however, that the warmth be communicated in a *gradual* manner, for the sudden application of a high degree of heat could not fail to do irreparable injury by destroying the small degree of remaining excitability of the organization. Frictions with dry flannel or stimulating substances, such as powdered mustard or capsicum will contribute to excite the circulation and impart warmth to the body. The injection of stimulating fluids into the rectum will be proper, more especially when some manifestations of returning life have been established by the foregoing measures. For this purpose a solution of ammonia, with wine, or camphor, or warm diluted brandy, may be used; and where the abdomen is tense and tumid, we may inject a warm infusion of senna in wine, with the view of exciting the action of the bowels.

Galvanism has also been employed as a resuscitating agent in cases of this kind. Wiedemann speaks highly of this influence, more especially when directed upon the external organs of generation. He asserts that he has known the most excellent effects produced by it when employed in this manner. It must be observed, however, that both electricity and galvanism can be employed with a prospect of advantage only when communicated in a very weak state, for when strongly applied, they tend to exhaust rather than to increase the vital energies.

Various other modes of exciting the vital powers have been recommended; such as exposing the eyes to the direct rays of the sun; applying volatile and stimulating fluids to the snyderian membrane; plucking the hairs; tickling the soles of the feet, sides, and arm-pits; acrid substances applied to the tongue; burying the patient up to the head in warm ashes or sand, &c.

Venesection has been much recommended in asphyxia from submersion; and some have particularly advised opening one of the jugulars. Some advantage may, perhaps, be occasionally obtained from this measure, where a flow of blood can be procured, by its tendency to relieve the oppressive venous congestions of the lungs. In general, however, no blood can be obtained by opening a vein, except in cases of very transient submersion, or where the action of the heart has been re-excited by the means already mentioned; and here there is much reason to apprehend that injury rather than advantage would generally result from this operation.

The return of the vital actions is at first manifested by transient and weak twitches of the muscles of the face, particularly of those about the lips; succeeded by feeble, irregular, and con-

vulsive efforts to breathe; spasmodic tremor and agitation of the extremities; a small and weak pulse, beating at very long intervals; and a discharge of a frothy fluid from the mouth. By degrees sensation and the power of motion return; the lips assume a red hue, the skin becomes soft and warm, particularly about the scrobiculous cordis, and in some instances vomiting takes place.

When recovery has been so far effected, the utmost degree of caution is necessary to prevent, on the one hand, over-excitation by stimulants, and, on the other, sinking from deficient support of the vital energies by appropriate excitants. I knew an instance where a person after much exertion was so far resuscitated from a state of asphyxia by submersion as to breathe freely, and to manifest consciousness and the power of voluntary motion. The persons about him were directed to give him from time to time, certain portions of warm wine whey. This was wholly neglected, and in four or five hours he sunk and expired. Warm wine, or weak brandy toddy with warm aromatic ptisans, as infusion of balm, sage, or catnep, should be given from time to time, according to the state of the pulse, and the patient must be kept *perfectly at rest in a dry and warm bed*, with the air freely circulating through the room, if the weather be warm.

Our efforts to effect a resuscitation in cases of this kind, where the period of submersion has not been so protracted as to preclude all reasonable hopes of ultimate success, should not be too readily abandoned. Instances have occurred in which the signs of returning life did not manifest themselves for more than an hour after commencing with the resuscitating measures. It has been said, and the observation appears to me very correct, that there is much reason to believe that some lives are lost in this way for want of duly continued exertions to re-establish the vital actions. In still-born infants, I have known two instances of ultimate recuscitation, where the signs of returning animation were not noticed for above forty minutes after the commencement of the usual measures. It should also be observed, that well-authenticated instances of recovery are on record, where the resuscitating means were not applied until many hours after the person had been taken out of the water; and hence, where the time of submersion has been short, and, for want of assistance, means are not employed, it may still be proper to make suitable efforts to effect a resuscitation, although several hours have elapsed before this can be done. De Haen, whose authority cannot be questioned, asserts that he resuscitated a person seventeen hours after he had been taken out of the water; and other similar instances might be adduced which, though less remarkable, perhaps, are equally encouraging to late attempts of this kind.

2. *Asphyxia from the inhalation of irrespirable gases.*—The most common cause of this variety of asphyxia, is the inhalation of *carbonic acid gas.* When this aeriform poison is undiluted with atmospheric air, it will destroy life almost instantaneously by abolishing at once all the sensibility and irritability of the nervous system. When mixed with a portion of atmospheric air, its sedative effects on the brain are less vehement and sudden; giving rise to vertigo, faintings, insensibility, asphyxia, or death, according to the degree of its purity and the length of time during which persons are exposed to its influence. When life is suddenly destroyed by inhaling this gas in an undiluted state, the dead body is pale, collapsed, and flaccid. In instances, however, where death or asphyxia is caused by a gradual destruction of the vital powers, from the gas being more or less mixed with atmospheric air, the face exhibits a tumid and livid appearance, the veins about the neck and head are turgid, the tongue somewhat swollen, the lips blue, with suggilations on different parts of the surface, and the body remains warm for many hours, or even for several days. On dissection, the sinuses of the brain, the jugulars, right side of the heart, pulmonary arteries, the lungs, and the cavæ are always strongly congested with black and generally fluid blood. The pulmonary veins, left side of the heart, and aorta, on the contrary, are empty, or contain but a small quantity of blood. The ventricles of the brain are commonly charged with a considerable portion of bloody serum, and the cellular structure about the head and neck is often found infiltrated with the same kind of fluid. The bronchia are filled with a frothy mucus more or less tinged with blood; and the mucous membrane of the stomach and intestines, usually exhibits a dark red, ecchymosed, and distended appearance. The epiglottis is generally erect, and the glottis patulous.*

Carbonic acid gas produces its fatal effects on the animal economy both by excluding the requisite portion of oxygen or respirable air from the lungs, and thereby preventing the conversion of venous into arterial blood, and by a peculiar and exceedingly powerful sedative principle independent of its mere irrespirable character. Animals die much more speedily when confined in this and other mephitic gases, than when placed in an exhausted receiver, or when the atmospheric air is otherwise excluded from the lungs;† and frogs, worms, leeches, and snails are killed in a few hours by being placed in carbonic acid gas, although capable of living a long time when simply deprived of atmospheric air.‡ These facts show conclusively, that in addition to the mere exclusion of respirable air, there is also a

* Portal. Observations sur les Effets des Vapeurs Mephitiques.

† Fothergill. A new Enquiry into the Suspension of Vital Action in Cases of Drowning and Suffocation.

‡ Carminati. De Animalium ex metphitibus, et noxiis halitibus interitu ejusque Causæ, p. 89.

deleterious impression made on the vital powers by inhaling this gaseous poison; and it acts therefore at once like submersion or strangulation, and as a powerful sedative poison.

There are several other gaseous substances which, when inhaled in a concentrated form, produce immediate asphyxia or death. The fumes of sulphur, sulphurated hydrogenous gas, nitrous gas, azote, hydrogene, and certain gaseous poisons, generated by putrefying animal and vegetable substances, destroy life with more or less rapidity. Of these gases, azote and pure hydrogen appear to destroy life simply by their not being respirable, or by preventing the chemical changes of the blood in the lungs, in the same manner that submersion or obstruction of the trachea produces this effect.*

Treatment.—When the asphyxia from this cause, (carbonic acid gas) is *incomplete*, with some degree of sensibility remaining, the patient may be generally soon recovered by conveying him immediately into the open air, supporting him in a sitting posture, dashing a little cold water upon his face and breast, applying dry frictions to the extremities, and as soon as he can swallow, giving him small portions of cold wine and water.

If the unfortunate individual is in a state of *perfect* asphyxia, without any manifestations whatever of life, we may sometimes succeed in effecting resuscitation by the following course of management. He should be speedily carried into a free and cool air, divested of his clothes, and laid upon a sheet spread on the floor or the ground, with his head and shoulders somewhat raised. Cold water must now be dashed upon his breast, and cloths dipped in cold water applied to the head; or he may be supported in a sitting posture and the water poured on the head. In some cases the moment the cold affusion is made, a convulsive respiratory effort is excited. In an instance to which I was called about a year ago, I found the patient without the slightest indications of vitality. Having stripped off his clothes, I dashed a bucket full of cold water over the head and breast, and almost at the same moment I observed a short convulsive gasp. By continuing the affusions at short intervals, the respiratory efforts were repeated, at first very weak, and at intervals of nearly a minute, and by the additional aid of stimulating frictions, the respiration was fully established in about an hour after the first symptoms of returning life.

Frictions with the flesh-brush, or with stimulating embrocations, are important auxiliaries in re-exciting animation in cases of this kind. We may also derive advantage from volatile stimulating applications to the mucous membrane of the nose, by means of a feather—such as aqua ammonia, æther, and camphorated spirits. At the same time, also, stimulating ene-

* Bichat on Life and Death, p. 242.

mata should be used, particularly a solution of the carbonate of ammonia in a mucilaginous fluid. Richter speaks favourably of the injection of cold water and vinegar for this purpose. If the act of respiration be not soon excited by the cold affusions, artificial inflation of the lungs must be resorted to in the way mentioned above. Upon these two means we must chiefly rely in our efforts to effect resuscitation. When the respiration is partially established, but continues very laborious, and with a rattling noise in the bronchia, considerable benefit will sometimes result from the abstraction of from eight to ten ounces of blood from the arm. As soon as the respiration is fully established, the patient should be wiped dry and laid in a comfortable bed, and small portions of warm wine, or wine-whey, or some other gentle stimulating beverage allowed.

Galvanism has been employed, and in some instances with manifest advantage, in asphyxia from mephitic gases. The galvanic current should be weak and passed along the course of the pneumo-gastric nerves, by placing the negative conjunctive wire in contact with the scrobiculus cordis, and the positive pole with the part immediately over the par vagum in the neck, just below the sterno-mastoid muscle.

After the vital actions have been re-established, the arterial excitement, in some instances, becomes violent and tumultuous. The heart palpitates vehemently; the pulse is full, strong, and hard; the vessels of the head turgid, and a disposition to heavy sleep ensues. Under these circumstances venesection is indispensable, and the blood should be suffered to flow until the activity of the circulation is considerably moderated. In general, much caution is necessary after resuscitation is effected, neither to excite the vital powers too much—which may readily be done—nor to suffer them to languish for want of some gentle stimulus.

3. *Asphyxia from electricity.*—When electricity is passed through the animal system, in currents of moderate intensity, it excites and invigorates the vital energies; but when its intensity is great, it suddenly suspends or entirely destroys the sensibility and irritability of the nervous system, and gives rise to more or less complete asphyxia, or immediate and irrecoverable loss of vitality.

The appearances exhibited by persons who have been struck by lightning vary considerably. In most instances, red streaks may be noticed on the breast and arms, of an acchymosed and highly irritated appearance, and generally of a zigzag form. The hair is usually singed on some parts; and small blisters, like those produced by a scald, occur on different parts of the body. Sometimes blood is discharged from the ears, and suggilations of large extent are frequently found on the trunk and extremities. Internally structural lesions are

but rarely detected in persons who are killed by lightning. In general, the heart is turgid with blood, but the lungs are usually collapsed, and entirely free from vascular congestion. The blood is always deprived of its coagulability by a fatal stroke of electricity; and the body commonly enters into putrefactive decomposition with extraordinary rapidity. When the electric stroke does not entirely destroy the vital powers, the face is generally red and bloated; more or less blood often issues from the mouth and nose; respiration is slow and very laborious; the pulse is extremely weak and irregular, or entirely absent; and spasmodic twitches of the muscles of the eye-lids, mouth, and throat sometimes occur. Persons who are recovered from a state of asphyxia, caused by lightning, generally suffer for a long time afterwards with tremors, painful sensation, swellings, and some degree of numbness in the extremities, more especially in the legs. Such individuals usually retain a particular susceptibility to the electric influence, and are apt to feel a peculiarly uneasy feeling on the approach of a thunder-storm.

The treatment of asphyxia from this cause, does not differ from that which is mentioned for asphyxia from mephitic gases. *Cold affusions* are particularly valuable to re-excite the latent vital energies in cases of this kind. Cold water should be copiously and frequently dashed over the whole body, and frictions diligently made with the flesh-brush or pieces of rough flannel. Galvanism and electricity also have been especially recommended in asphyxia from a stroke of lightning. Stoll asserts, that animals in a state of asphyxia from an electric shock, have been speedily recovered by a second shock of this power;* and Bernt assures us that in a case produced by a stroke of lightning, a second shock effected a resuscitation.† M. Abilgaard has also related some instances of asphyxia from this cause, in inferior animals, in which resuscitation was effected by a second shock of electricity.‡

4. *Asphyxia from cold.*—When the body is subjected to the influence of intense cold, the superficial blood-vessels shrink; the surface becomes pale and contracted; respiration oppressed; the extremities benumbed and weak; and finally, an irresistible desire to sleep comes on; and unless speedy aid be obtained, insensibility, asphyxia, and death inevitably ensue. For the mode in which these effects are produced by low temperature, the reader is referred to the article *cold*, page 27, of the first volume of this work.

* Rettungsmittal in ploetz. unfaellen. p. 63.

† Vorlesungen Ueber d. Relungsmittel. beim Scheintode, p. 121; as quoted by Richter. Specu. Therap. vol. viii. p. 647.

‡ Loc. Med. Havnien. Collectan, &c. T. ii.—Good.

Instances of resuscitation from asphyxia, caused by intense cold, are by no means uncommon; and cases are related in which re-animation was effected many hours, or even several days after the asphyxia was produced.* The principal resuscitating means in cases of this kind is the gradual communication of warmth to the body. The introduction of warmth requires, however, the utmost degree of caution; for, if the heat be rapidly communicated, it will inevitably destroy the remaining vitality, or should a partial recovery ensue, fatal gangrene would be the certain consequence. When a person is found in a state of insensibility from cold, he must on no account be immediately conveyed into a warm chamber, or placed near the fire. His body should be immersed in spring water, or water fresh drawn from a well. Burying the body in fresh snow has also been recommended for this purpose. Richter states, that the snow-bath is decidedly the most important resuscitating means we possess in cases of this kind. After the body has been suffered to lie in water or snow for forty or fifty minutes, it should be carefully dried with soft pieces of flannel, wrapped in blankets, and conveyed into an unheated chamber. Gentle frictions with flannel should now be resorted to, and if no manifestations of respiration occur, artificial inflation of the lungs should be practised. If these efforts succeed in restoring symptoms of life, the temperature of the room should be very gradually increased, and bottles filled with luke-warm water laid to the feet, and about the body. When the power of deglutition is restored, moderately warm ptisans—such as balm, sage, or elder-blossom tea, and diluted warm wine, may be given with advantage; but the stronger stimulants must be rigidly interdicted.

CHAPTER XVII.

ANGINA PECTORIS.†

Angina pectoris was not noticed as a distinct disease until the attention of the profession was directed to it by Dr. Heber-

* Kruinitz. Oekonom. Encyclopædia, Th. xv. p. 261. Richter. Sp. Ther.

† This disease has been described under a great variety of names, as *asthma convulsivum*, by Elsner; *arthritis diaphragmatica*, by Butler; *syncope anginosa*, by Parry; *asthma spastico arthriticum inconstans*, by Stoeller; *strenalgia*, by Baumes; *sthenocardia*, by Brera; *asthma dolorificum*, by Darwin; *sternodynia syncoptica et palpitante*, by Sluis; *pnigophobia*, by Swediaur; and *cardodyne spasmodica*, by Harles.

den in a very perspicuous and full account of its peculiar character, published in the second volume of the Medical Transactions of the London College of Physicians. Since that time, it has been frequently and minutely described, and of late years, especially, its phenomena and pathology have received much attention.

This disease consists of sudden paroxysms of pain and pressure at the lower part of the sternum, or about the region of the heart, extending across the breast to the left shoulder, and to the arm as low as the insertion of the deltoid muscle, or the elbow, or even to the fingers; accompanied with some difficulty of breathing, great anxiety, and a sense of impending suffocation.

The attack usually commences without any premonitions of its approach, by sudden pain and constriction in the left side of the chest, or near the scrobiculus cordis, and a peculiar numbness with more or less pain in the left arm, particularly on the inside, as low as the elbow. If the paroxysm comes on while the patient is walking, he is instantly obliged to stand still. The least exertion gives rise to intense darting and constrictive pain in the cardiac region; and the patient feels as if an attempt to move would inevitably cause immediate death. During the paroxysm the countenance is pale and expressive of great anguish, the extremities are cold, the heart palpitates violently, there is more or less dyspnœa, turgidity of the vessels of the head, and in some instances syncope and even convulsions ensue. Sometimes the pain passes up along the neck and face, or back to the spine, with a sense of retraction at the lower end of the sternum; and occasionally it is felt in both arms at once. At first the paroxysms last but a few minutes; and recur at remote intervals, generally in walking up hill, or rapidly ascending stairs soon after taking a full meal. By repetition, however, they become more and more violent and protracted, and return, in aggravated instances, on the slightest bodily exertion. When the attack has passed off, the patient usually feels only numbness of the left arm, with some degree of palpitation, and, occasionally, slight headach, hurried respiration, and anxiety of feeling in the præcordia.

Pathology.—This disease is very rarely met with in young people; and it occurs indeed but seldom in individuals under forty years of age. I have, nevertheless, seen a well-marked case in a young man of an arthritic habit, who was not more than twenty-three years old; and I am now attending a girl under eleven years of age, who is occasionally seized with paroxysms which appear to me genuine instances of this affection.

The majority of cases of angina pectoris occur in individuals of a gouty or rheumatic habit. Jahn states that in the sum-

mer of 1814 he met with several instances of this disease which supervened apparently as sequelæ of typhus fever.*

In relation to the immediate or exciting causes of this affection, pathologists have expressed very different opinions. Heberden, Kreysig,† and Parry‡ attributed the disease to ossification of the coronary arteries, and this opinion is still entertained by many physicians. Others have ascribed it to ossification of the semi-lunar valves of the heart; and various other organic affections of this organ and of the adjoining parts, have been mentioned as its cause, such as morbid dilatation and softening of its structure, ossification of the cartilaginous portion of the ribs; suppurative inflammation of the mediastinum, and disease of the pericardium. That no one of these morbid conditions, however, can be regarded as the proximate or essential cause of angina pectoris, is evident from the fact, that in many fatal instances of the disease, no such structural disorders are discovered on post-mortem examination. M. Recamier, principal physician at the Hotel Dieu, has never witnessed an instance of ossification of the coronary arteries in the bodies of those who have died of angina pectoris; and he wholly rejects the idea of its depending on organic cardiac disease.§ M. Laennec, also, denies the necessary connexion between organic affections of the heart and angina pectoris. "In a slight and middling degree," he says, "this disease is very common, and exists very frequently in persons who have no organic affection of the heart or large vessels.‖ It must, moreover, be observed that ossification of the coronary arteries, and other structural diseases of the heart, are frequently met with in subjects who had never experienced any of the characteristic symptoms of angina pectoris. Mr. Cook says, "I have met with numerous instances of ossification in the coronary arteries which had never been attended with symptoms of angina;¶ and Mr. Shaw observes, in relation to this subject, that he had often found the coronary arteries like tubes of bone in old people who never had the slightest symptoms of this disease.** The occasional spontaneous removal of the disease, and its susceptibility, in some instances, of being cured, militate also directly against the doctrine of its necessary dependence on organic affection of the heart. Laennec avers, that "he has known many individuals who had suffered a few very severe, but short attacks of angina pectoris, and had had no fur-

* Klinic der Chronischen Krankheiten. Band. iv. p. 406.
† Die Krankheiten des Herzens. 2 Th. 2. abhand. 5. Kap.
‡ Treatise on Syncope, Anginosa, &c.
§ Medico-Chir. Rev. March, 1829. p. 573.
‖ On the Diseases of the Chest, last edition; translated by Dr. Forbes.
¶ Treatise on the Digestive Organs, p. 274.
** Manual of Anatomy.

ther return of it." Dr. Parry, who believed that the disease was always caused by ossification of the coronary arteries, nevertheless mentions a severe case, that was wholly or nearly cured by the use of the Bath waters. Dr. Baillie also met with two patients affected with symptoms "exactly resembling those of angina pectoris, who ultimately recovered entirely."*

Unquestionably, however, ossification of the coronary arteries, and other organic cardiac affections, are very frequently connected with angina; "but nothing proves, even in such cases," says Laennec, "that the disease depends on affections of this kind, inasmuch as they are of various kinds, and as the angina exists without them."

A *softened structure* or flabby and dilated state of the heart, is almost as common in this affection as ossification of the coronaries. In a most severe case which was seen by Dr. Latham, Dr. Bree, and Dr. Johnson, the heart on dissection was found "pale, flabby, and so lacerable as to be easily mashed between the fingers like wetted paper or putrid meat."† Dr. Johnson states, that in all the cases which occurred in his own practice, where post-mortem examination was made, there was a flabby and softened state of the muscular structure of the heart, connected in a few instances with ossification of the coronary arteries.‡ Dr. Cook also mentions a peculiar flaccidity and softness of the structure of the heart, "as a phenomenon, usually found after this disease," sometimes with, and at others without ossification of the coronaries or cardiac valves.§ Hypertrophy or dilatation of the heart, without any other organic disorder, is mentioned by Laennec as no uncommon condition in this affection. About six years ago I attended a gentleman, in consultation with Dr. M'Clellan, who was frequently affected with violent paroxysms of angina pectoris. In one of the attacks he suddenly expired. On dissection, the heart was found very large, and its structure so soft as to be easily broken down by pressure between the fingers.

From these facts, it appears evident that organic affections of this kind are to be regarded rather as the *exciting*, than as the essential and proximate cause of the disease. It is now believed by many, that *angina pectoris consists in a neuralgic affection of the heart*, or of the cardiac plexus; and there can, I think, scarcely exist a doubt of the correctness of this opinion. Laennec conceives that the location of the nervous irritation may vary according to circumstances. "For instance," he says, "when there exists at the same time pain in the heart and lungs, we may presume that the affection is principally

* Lectures and Observations on Medicine, p. 185.
† Med. Chir. Rev. April, 1826, p. 497.
‡ Ibid. March, 1828, p. 430.
§ Loc. citat.

seated in the pneumo-gastric nerves; on the other hand, when there is simply a sense of stricture of the heart, without pulmonary pain or much difficulty of breathing, we may consider its seat to be in the nervous filaments which the heart receives from the grand sympathetic. Other nerves are also simultaneously affected, either by sympathy, or from direct anastomosis;—for example, the branches of the brachial plexus, particularly the cubital, are almost always so; the anterior thoracic nerves originating in the superficial cervical plexus are also frequently affected; and it is also sometimes the case with the branches derived from the lumbar and sacral plexuses, as we find the thigh and leg now and then participating in the pain and numbness." M. Recamier also considers this disease as a species of neuralgia; and the same opinion is expressed by Dr. Johnson,* Jahn,† Jurin, Desportes, and other writers. Although this nervous irritation or neuralgia of the heart appears to be most frequently excited by some organic cardiac affection; it may also be occasioned by other remote causes or irritations in the system. There are some well authenticated facts on record, exemplifying the occasional dependence of this disease on dyspeptic irritation. I have already adverted to the two cases mentioned by Dr. Baillie, which ultimately recovered, and were evidently dependent "upon an imperfect digestion." Mr. Cooke, also, to whose excellent work on the diseases of the digestive organs I have referred above, thinks that angina pectoris is occasionally excited "by derangement of the digestive organs, especially by dyspepsia." Several eminent writers have supposed that the disease depends on gouty irritation;‡ and Lentin§ maintained that it is always of rheumatic origin. From all that has been ascertained, therefore, in relation to this subject, it would seem that angina pectoris may be excited by various causes, both organic and dynamic, and that it consists essentially in a peculiar irritation of the cardiac nerves, giving rise to pain, and more or less spastic action of the respiratory muscles.

Treatment.—When once fully developed, angina pectoris is an extremely unmanageable affection, and almost always sooner or later terminates in death. It must not, however, be regarded as a hopeless affection, even in its most aggravated form; for instances of complete recovery have occurred, after the disease had continued for several years, in occasional paroxysms of great severity.

For the relief of the paroxysm, we may have recourse to

* Med. Chir. Rev. Nov. 1828, p. 197.

† Loc. citat. Bd. v. p. 407.

‡ Berger, Abhandl. f. Pract. Aerzte. b. x. p. 715. Hesse, Specimen Inaugurale Medicum de Angina Pectoris.

§ Beitraege zur Ausuebenden Arzneiwissenschaft, b. i.

small bleedings, anodynes, and antispasmodics. Ether, camphor, opium, hyoscyamus, and the liquor ammoniæ succinatæ, have been most recommended for this purpose. I attended a patient some years ago, who was frequently seized with violent paroxysms of this affection, and who generally obtained considerable relief from a draught of very cold water. This patient died suddenly in one of the attacks; and on dissection the semilunar valves of the heart were completely ossified. Perfect rest need scarcely be enjoined, for patients are irresistibly constrained to remain quiet during the paroxysm. It would appear even that where the patient can summon up sufficient firmness of mind to continue walking when the attack comes on, the exertion has a tendency in some instances to mitigate the pain and constricted respiration.* Dr. Good advises that the patient be immediately placed in an inclined position, with the head raised high; and an emetic instantly administered. If the pain and difficulty of respiration continue after the vomiting, "opium intermixed with camphor, ether, or other diffusible antispasmodics, should be freely employed." Emetics were, I believe, first recommended in the paroxysm of this disease by Percival.† Richter admits, that much relief may sometimes be obtained from vomits; but he asserts that they may also readily do a great deal of harm. Where the oppression in the chest is great, and the habit robust and plethoric, blood-letting will occasionally afford some relief. According to Laennec, however, leeches applied to the epigastrium or region of the heart, sometimes prove more beneficial than venesection. Indeed venesection may very readily prove injurious in this complaint, and it ought not to be used, unless the indications for its employment are unequivocal. Dr. Parry, who particularly advocates the practice of venesection in this complaint, advises that the blood "should be taken from a small orifice, the patient being placed in the horizontal position, while the physician is to keep his finger on the pulse, to decide the limits to which venesection is carried." Advantage may also be obtained during the paroxysm from *derivative applications*, such as sinapisms to the legs or soles of the feet, and over the epigastrium, and rubefacient frictions to the lower extremities.

For preventing the return of the paroxysms, various remedies and modes of treatment have been recommended. As the cardiac irritation may be wholly symptomatic of gastric disorder, it will be proper, in all instances, to pay particular attention to the biliary and digestive functions. A mild diet, the occasional use of small portions of blue pill, chalybeate mineral waters, and tepid or cold bathing, are particularly indicated

* Parry's Treatise on Angina Pectoris.
† Medical and Philosoph. Comment. vol. iii. p. 180.

in cases attended with dyspeptic symptoms. In individuals of a gouty or rheumatic habit, much advantage, it is said, has been obtained from the protracted use of guaiacum.*

Goodwin states that he derived very great advantage from the frequent application of a strong solution of tartar emetic in spirits of camphor;† and cases have been published, which go to show that the establishment of a permanent drain from the region of the heart, by a seton or issue, may be resorted to with considerable prospect of benefit.‡ Baumes speaks highly of the internal use of phosphoric acid in this complaint; and thinks it capable of arresting the process of ossification;§ an opinion which was also entertained by Richter.‖ It is given to the amount of a drachm and a half daily in the form of lemonade. In Hufeland's Journal, a writer speaks in the highest terms of praise of the extract of *lactuca virosæ*. Sixteen grains of this extract is to be dissolved in two drachms of cinnamon water, of which fifteen drops must be taken every two hours.¶ Arsenic has been used with considerable benefit by Richter; and Smith employed small doses of James' powder in union with castor and assafœtida, with very good effects in some cases of this complaint.** The celebrated Odier of Geneva restricted his patients to an extremely spare and simple diet, as the best means, in his opinion, for preventing the return of the disease. Laennec asserts that the *magnet* is one of the best means for palliating or preventing the paroxysms of angina pectoris, that we possess. He uses it in the following manner: "I apply," he says, "two strongly magnetised steel plates, of a line in thickness, and of an oval shape, and bent so as to fit the part, one to the left præcordial region, and the other exactly opposite on the back, in such a manner that the magnetic current shall traverse the affected part. This method has succeeded better in my hands in the case of angina than any other, as well in relieving the paroxysm as in keeping it off. After a certain time, the magnetism most commonly produces an eruption of small pimples, which are sometimes so painful as to oblige us to interrupt the process for some days. This eruption almost always takes place under the anterior plate, and cannot therefore be attributed to the action of the oxidized pieces of steel on the skin. By means of these plates, applied to the epigastrium and spine, I stopped at once a hiccup which

* Berger. Loc. cit. Bd. p. 708.

† Annales de Litterature Medicale Etrangere, vol. iv. as quoted by Richter.

‡ New-York Medical and Physical Journal, December, 1814.

§ Annales de la Societe Pratique de Montpellier, tom. xii.

‖ Specielle Therapie, vol. v. p. 195.

¶ Journal, &c. 1809, st. i. p. 57.

** Medical Commentaries, Edin. vol. v. p. 78.

had lasted three years. At the end of six months, the patient having one morning neglected to put on the plates, the hiccup returned, but was removed on their being replaced." When in angina the relief obtained from the magnet is but small, its good effects may be increased by previously blistering the part to a small extent to which the anterior plate is applied.

In the management of this affection, it is all important that the patient abstain from spiritous drinks, and avoid strong mental emotions of every kind. Inordinate venereal gratifications, too, are in general decidedly injurious; and strong corporeal exertions, particularly walking up hill, or rapidly ascending stairs, as well as sudden atmospheric vicissitutes, indigestible and irritating articles of food, must be carefully avoided.

CHAPTER XVIII.

OF THE DISEASES OF THE HEART.

THERE is scarcely a subject in pathology that has attracted so much attention of late years, as the chronic affections of the heart. The researches of Corvisart,* Kreysig,† Testa,‡ Laennec,§ Burns,‖ and Abercrombie,¶ have thrown great light on this important class of diseases, and it is from these sources chiefly that the following observations are drawn.

Symptoms.—The general symptoms are nearly the same in every variety of structural disease of the heart. More or less habitual dyspnœa almost universally attends in affections of this kind; and a careful attention to the particular modifications of this symptom, is of great importance in a diagnostic point of view, (Corvisart.) The acts of inspiration are either very quick, and effected more by the action of ribs than by the diaphragm, and somewhat wheezing; or the patient breathes as if he had been walking rapidly, and appears to make unusual efforts in filling the lungs; or finally, the respiration is calm, and without any particular effort, but the air does not appear

* Es sai sur les Maladies et les Lesions Organiques du Cœur.

† De Krankheiten des Herzens. Berlin, 1814-17.

‡ Delle Malattie del Cuore.

§ Treatise on the Diseases of the Chest: translated by J. Forbes, M. D.: 3d edition.

‖ Observations on some of the most frequent Diseases of the Heart. By Allan Burns, 1809.

¶ Contributions to the pathology of the heart. Transact. Med. Chirug. Societ. of Edinb. vol. i. 1824.

to enter into the lower portion of the lungs. Mental agitation, or corporeal exertions, particularly walking, or ascending acclivities or stairs, never fail to bring on more or less violent paroxysms of dyspnœa; and in the latter stages of the disease, the most trifling excitements of this kind give rise to extremely distressing spells of suffocative breathing, attended with great weight and constriction in the breast, inexpressible anxiety, a turgid and usually livid hue of the face, particularly of the lips, which are swollen and purple; distention of the veins in the neck and head, and an expression of extreme distress and suffering in the countenance. These paroxysms of dyspnœa often last but a few minutes, and rarely continue beyond half an hour, and subside rapidly to the ordinary state of respiration. During the early period of the disease, or in cases of a less serious character, the patient is able to lie down, (though rarely with any degree of ease on the right side) but the sleep is much disturbed by alarming dreams, frequent startings and spells of palpitation—obliging the patient suddenly to sit up in bed. In violent or inveterate cases, however, the patient is sometimes obliged to remain day and night in a sitting or half-sitting posture—every attempt to lie down being immediately followed by the most harassing paroxysm of palpitation of the heart and suffocative breathing. One of the most frequent symptoms of cardiac diseases is irregular action of the heart. Sometimes the heart beats tumultuously and indistinctly, which has been compared to the bubbling of boiling water; and at others it seems to be in a state of tremulous agitation. More commonly, however, it beats vehemently against the side of the thorax, so as to enable a person distinctly to hear its throbs, and to communicate a motion to the whole superior part of the body. *Syncope*, too, is no uncommon occurrence in diseases of this kind. The patient is liable to occasional attacks of *partial* fainting, often of long continuance, during which he experiences a feeling of great oppression and constriction in the region of the heart, a partial loss of consciousness and sensorial power, inexpressible anxiety in the præcordia, with an extremely feeble and fluttering or intermitting pulse, and scarcely any perceptible respiration. From this state of adynamia, he sometimes passes suddenly into deep syncope, approaching the character of asphyxia, and after a short period, again suddenly recovers his entire consciousness.* In some cases, paroxysms of *angina pectoris* occasionally supervene; and instances occur in which the cardiac disease gives rise to convulsions and apoplexy.† The habitual aspect of the countenance, during the intervals of the exacerbations of the dyspnœa, is usually pale and cachectic, with a leaden

* Kreysig. loc. cit. B. i. p. 332.

† Dr. Forbes. Edition of Laennec on the Diseases of the Chest.

lividity of the prolabia, and a puffy swelling under the eyes. Œdema of the feet and legs is usually one of the earliest symptoms of organic affections of the heart. In the progress of the disease œdema gradually extends higher, and often invades the scrotum, labia, and even the trunk. In some instances, the pulse differs but very little from its natural state, except during the occasional paroxysms of the dyspnœa and palpitation; but more frequently it is irregular, intermitting, and often has a peculiar jarring beat, or is sharp, exceedingly firm, and incompressible. Organic diseases of the heart are very generally attended with a peculiarly irritable temper, and a disposition to melancholy and hypochondriasis.* Symptoms of indigestion, too, are very apt to occur in diseases of this kind; and in many instances there exists a strong tendency to hæmorrhagy, particularly from the lungs and the nose. Patients labouring under cardiac affections are liable to sudden and severe pains in different parts of the body.

Dissection shows that cardiac diseases have a particular tendency to produce great engorgement of the capillary vessels, and it is to this circumstance, no doubt, that we have to ascribe the dropsical effusions into the cellular structure and cavity of the chest, so common in these affections. In almost all those who die of organic disease of the heart, the mucous membrane of the alimentary canal exhibits a deep red or violet colour, and in most instances, "the liver and capillaries situated beneath the serous, mucous, and cutaneous tissues, are strongly gorged with blood."† A very vivid redness of the internal surface of the heart and large vessels, is also a very common phenomenon in subjects who have died of such affections, and this is particularly noticed where the affection consists in a morbid dilatation of the ventricles of the heart.

Causes.—The etiology of the diseases of the heart is enveloped in much obscurity. There exists, no doubt, a natural predisposition in some individuals to affections of this kind; but our notions concerning the nature of this predisposition amount only to some plausible conjectures. An inordinate irritability of the heart and arteries has been mentioned as a circumstance predisposing to cardiac affections; and an original defect in the muscular energy of the heart, as well as a disproportion between the activity of this organ and the blood-vessels may also occasionally be the foundation of such diseases. It is said that the predisposition to organic affections of the heart, is in some instances manifestly hereditary, and its occasional prevalence in certain families renders this opinion very probable. Dr. Forbes refers to Lancisi, Albertini, Morgagni,

* Testa. l. citat.
† Laennec l. cit. p. 592.

Portal, Corvisart and Testa, for striking examples of this kind; and a remarkable instance is related in the eleventh vol. of the Medical Commentaries. A *strumous habit* is considered by Testa as a strong predisposing cause of organic affections of the heart; and Dr. Forbes says, that his own experience has led him to the same conclusion. "In this case," he observes, "I have thought that the disease is developed at a more early period than under other circumstances. Perhaps in this case an original disproportion of the parts usually exists." The *remote* causes of the diseases of the heart appear to be numerous and very diverse in their characters. The following have been mentioned as the most common and powerful.

1. *Moral Causes.*—Corvisart, Kreysig, and others assert that mental emotions are among the most frequent and powerful causes of structural diseases of the heart; and from the well known influence of violent affections of the mind on this organ, there can be no doubt indeed of their tendency, when frequently repeated, or of protracted duration, to give rise to such diseases. Dr. Forbes states, that he attended a poor woman "affected with organic disease of the heart, of many months standing, which was suddenly produced by horror at seeing her infant scalded to death."* Instances have occurred in which sudden terror, anger, or excessive joy has determined the blood so vehemently to the heart as to cause immediate rupture of its ventricles.†

2. *Gout and Rheumatism.*—Organic diseases of the heart are probably more frequently occasioned by metastasis of gout or rheumatism than by any other cause. Sauvages mentions instances of cardiac affections alternating with paroxysms of gout;‡ and Dr. Scudamore has related a remarkable case of palpitation of the heart of three years standing, which suddenly disappeared on the supervention of an attack of articular gout.§ *Rheumatism*, however, appears to be still more frequently concerned in the production of cardiac affections. Dr. Cox has adduced some interesting examples of the dependence of diseases of the heart on metastasis of rheumatism. "Numerous cases of organic diseases of the heart and pericardium which he met with during his connexion with St. Guy's Hospital, were referrible to, or connected with rheumatism.‖ Dr. Cox states, moreover, that his observations have led him to believe, that "the majority of cases of organic diseases of the heart in *young people* are connected with rheumatism. Dr. James Johnson also observes, that "long and attentive observation"

* Laennec on the Diseases of the Chest, third edition.
† Richter, Specielle Therapie, B. v. p. 129.
‡ Nosologia Method. Tom. i. p. 518.
§ A Treatise on Gout and Rheumatism, fourth edition, p. 44.
‖ Observations on Acute Rheumatism and its Metastasis to the heart, by Thos. Cox, M. D. Lond. 1824.

has convinced him, "that a very considerable proportion of those active enlargements or hypertrophiæ of the heart, which are now so frequently met with in practice, are dependent on rheumatism." Sir David Dundas* and Dr. Hawkins† also, have published observations illustrative of the rheumatic origin of organic cardiac diseases; and Dr. Forbes has related several interesting instances of this kind.‡

3. *Cutaneous diseases.*—The repulsion of chronic cutaneous eruptions may give rise to organic diseases of the heart. Kreysig says, that when cardiac affections arise from causes of this kind, the disease is apt to occur in the external or internal membranes of the heart; and according to the observations of Testa, the most common structural lesions resulting from repelled cutaneous affections, are thickening and induration of the pericardium. Osiander mentions ulcerations of the external surface of the heart and of the pericardium;§ and Mekel has related a similar instance of disorganization of these parts, apparently the consequence of repelled cutaneous eruptions. Cardiac affections have also been known to result from the suppression of habitual perspiration of the feet, and from the healing up of old ulcers and issues. (Richter.)

4. *Syphilis* is also mentioned as no uncommon cause of diseases of the heart. Corvisart was of opinion that the excrescences which are sometimes found on the valves, usually depend on a syphilitic taint; and Lieutaud particularly refers to this disease as a cause of various structural disorders of the heart.‖ Mr. Bertin, however, thinks, that the influence of this cause, in relation to cardiac diseases, has been much overrated, an opinion which he was led to adopt after an experience of twenty years in the venereal hospital. Laennec also rejects the opinion of Corvisart with regard to the syphilitic origin of the excrescences on the valves.

5. *Diseases of other organs*, particularly such as are attended with long-continued and severe dyspnœa, are especially apt to give rise to hypertrophy or dilatation of the heart, "through the constant efforts this organ is called on to perform, in order to propel the blood into the lungs against the resistance opposed to it by the cause of the dyspnœa." Chronic pulmonary catarrh, phthisis pulmonalis, chronic peripneumony, empyema, and emphysema of the lungs, frequently give rise to these cardiac affections, and almost necessarily, where there exists a congenital disproportion between the size of the heart and the

† Med. Chir. Transact. vol. i.

‡ Rheumatism and some Diseases of the Heart. Lond. 1826.

* Original Cases, &c. p. 112, and p. 165. See also a note at p. 597 of his Translation of Laennec on the Chest, fourth edition.

§ Denkwuirtigkeiten, &c. Th. i. p. 146, as quoted by Richter.

‖ Hist. Anatom. Med. Tom. ii. ob. 510-516. Sprengle.

diameter of the aorta. (Laennec.) Chronic diseases seated in the abdomen, are also mentioned among the occasional causes of organic affections of the heart. Testa thinks, that induration and enlargement of the liver may give rise to diseases of this kind; but Corvisart, more correctly I think, regards the hepatic affection as the consequence, rather than the cause, of disease of the heart. "More probably," says Forbes, "it may be merely a concomitant, and the consequence of those chronic disorders of the stomach and upper bowels which are too frequent in all classes of people to be safely admitted as either a common cause or effect of affections of the heart." It is supposed that visceral enlargements within the abdomen tend to produce cardiac diseases by compressing the large vessels, and by impeding the circulation through the affected viscus, in consequence of which, greater efforts of the heart are made to oppose these causes of obstruction.

6. *Scurvy* has also been supposed to be capable of giving rise to structural disease of the heart, more especially to a morbid softness and flabby state of its structure.

7. *Congenital disproportion* of the different parts of the heart, and particularly between the left ventricle and the aorta, is no doubt at the bottom of the majority of the instances of hypertrophy and morbid dilatation. Where such a condition of the central organs to the circulation exists, every thing which is capable of causing a long-continued preternatural momentum of the circulation, or an impediment to the free passage of the blood through the lungs, or sudden and forcible determinations to, and congestions of the heart and large vessels, may readily give rise to aneurismal dilatation of this organ. Playing wind instruments, carrying heavy burdens, or straining in lifting heavy weights, running, the inhalation of suffocating vapours, protracted rigors of intermitting and other febrile diseases, intoxication, mental emotions, lymphatic and other tumours pressing on the carotids or some other arterial trunk, and a great variety of other causes of a like tendency, will be apt to produce structural disease of the heart, in individuals thus predisposed by a congenital conformation of this organ.

Blows, falls, and external injuries of the chest may likewise give rise to organic cardiac diseases. Inflammation of the heart, too, is frequently concerned in the development of affections of this organ. Indurations, morbid softening, excrescences, pseudo-membranous formations, adhesions, effusions into the pericardium, ulcerations, &c. may be regarded as the immediate consequences of cardiac inflammation, in whatever way this latter condition may be produced.

Diagnosis.—The diagnosis of the diseases of the heart is attended with much difficulty. The symptoms of organic affections of this organ are particularly liable to be confounded with

simple hydrothorax, hydropericardium, neuralgic angina pectoris, and even with asthma. Laennec asserts that none of the symptoms mentioned above can at all be regarded as pathognomonic, or sufficient to indicate disease of the heart, "since they are common to many other affections, and particularly to almost every chronic disease of the lungs." There is much truth in this observation, but I apprehend, nevertheless, that the uncertainty of the diagnosis founded merely on the symptoms, is not, in general, so great as might appear from the sentiments expressed by M. Laennec. When we find a patient complain of more or less habitual dyspnœa, greatly aggravated on corporeal exertion; slight œdema of the feet; a puffy and anxious appearance of the countenance, with a livid hue of the prolabia; frequent palpitations or tumultuous action of the heart; an inexpressible feeling of anxiety in the region of the heart during the paroxysms of dyspnœa; the occasional sudden occurrence of elastic puffy swelling of the lower eye-lids and the upper lip; an irascible and gloomy temper; quick and short inspirations; a deep purple and bloated aspect of the face during the paroxysms of dyspnœa; with an absence of the peculiar wheezing and rattling noise in the lungs; and a free secretion of urine; when these symptoms are noticed, we have strong reasons for presuming that there exists some disease of the heart. The sudden and exceedingly distressing effects, that arise from bodily exertions in diseases of the heart, are often sufficiently characteristic to distinguish them from simple hydrothorax. Every muscular effort, or unusual exercise, aggravates, to an extreme degree, the dyspnœa and distressing anxiety, and agitation in organic cardiac diseases. Going up stairs, or walking up a rising ground, almost immediately excites the most alarming and suffocative paroxysms of dyspnœa. Although these causes also aggravate, in some degree, the difficulty of breathing in simple hydrothorax, yet these consequences are by no means so violent and agitating in this disease, as in the affections of the heart. Without doubt, however, *mediate auscultation* affords the most certain means for recognizing the presence of organic cardiac diseases; but the tact for profiting by this diagnostic test, can only be acquired after a long course of careful experience, and it must, moreover, be observed, that even in the most experienced hands, the stethoscope more frequently gives fallacious indications with regard to the affections of the heart, "than in any of the other diseases which it is calculated to discover." (Laennec.)

Prognosis.—In general, the prognosis in diseases of the heart is particularly unfavourable. Nevertheless, much relief may sometimes be procured even in cases of great severity. "We sometimes," says Laennec, "see the judicious combination of blood-letting, diuretics, and tonics, remove the impending suf-

focation, the palpitation, and the dropsy, and restore the patient frequently for a long period to a tolerable degree of health: and it is commonly only after a great many attacks recurring after considerable intervals, that the disease at length proves fatal."

Death almost always occurs very suddenly, and not unfrequently when the patient seems to be free from any unusual disturbance from the disease. Indeed the mere degree of severity of the symptoms is often very fallacious in a prognostic point of view. In some instances, much continued uneasiness, with frequent exacerbations of distressing violence, will continue for many years before the disease terminates in death. In other cases, with less structural disorder of the heart, and no very severe symptoms, the disease will unexpectedly terminate fatally in a short period after the first manifestations of its presence. Dilatation and attenuation of the parietes of the ventricles; hypertrophy with softness of the muscular structure; and contraction or diminution of the openings of the heart, appear to be most apt to prove suddenly and unexpectedly fatal. The occurrence of other diseases in persons labouring under organic affections of the heart, always enhances the liability to a speedy unfortunate termination very considerably. Pregnancy, parturition, intermitting fever, &c. are especially calculated to increase the sufferings and dangers of structural cardiac affections. In some instances, diseases of this kind give rise to a protracted state of asphyxia, and cases of spontaneous resuscitation have occurred after the patient had been supposed to be dead.

Forms of structural cardiac disease.—A great variety of organic affections of the heart, and its immediate appendages, are mentioned in the works on this subject. The following are the principal forms of these diseases: 1. Thickening and enlargement of the heart, or hypertrophy; 2. Attenuation of the parietes of the ventricles; 3. A morbid softness and flabby state of the structure of the heart; 4. Dilatation of its cavities; 5. Aneurismal pouches of its ventricles; 6. Ossifica'ions of the valves and other parts; 7. Excrescences of a warty character on the valves, and from the internal surface of the ventricles; 8. Contraction of the openings of the heart; 9. Absence or laceration, or ulcerative destruction of the valves; 10. Adhesions between the pericardium and the heart; 11. Tumours on the heart, pericardium, or aorta; and 12. Polypous excrescences. Of these affections the severest and most common are: dilatation of the ventricles; hypertrophy, or enlargement and thickening of the parietes, or the connexion of both these conditions. The following observations on these affections are drawn from M. Laennec's work on the diseases of the chest.

1. HYPERTROPHY OF THE HEART.

The term hypertrophy is employed to designate an unnatural thickening or increase of the muscular structure of the heart, without a proportionate dilatation, though frequently with considerable diminution of its cavities. (Laennec.) In general, this thickening is at the same time attended with an *increased firmness* of the structure of the heart; but it is also sometimes found connected with a morbid *softening* of its substance, though the latter condition appears to be the consequence of a distinct disease, as it frequently exists independently of hypertrophy. In some cases, the hypertrophy is confined to a single ventricle; sometimes both ventricles are affected, with or without a similar condition of the auricles; and occasionally, though very rarely, the auricles alone are found in a state of hypertrophy.* M. Laennec states that he has seen the walls of the left ventricle more than an inch thick, and even as much as eighteen lines at the base. The thickening generally "diminishes gradually from the base to the apex. The columnæ carnæ of the ventricles and the pillars of the valves acquire a proportionate enlargement, and the septum between the two ventricles becomes also considerably thickened in the disease of the left ventricle." In many instances the cavity of the ventricles is diminished in size. Laennec has found the left ventricle so small in hypertrophy as "scarcely to be capable of containing an almond with its shell."

The symptoms of hypertrophy of the left ventricle are: A strong and full pulse; violent beating of the heart against the chest; and a violet or red tint of the face. The patient almost constantly *feels* the action of the heart; though very violent and tumultuous palpitations are less apt to occur in this than in some other affections of the heart. These symptoms, though frequently present, are not invariably so; for, in some very severe cases, the pulse is small and weak. The signs furnished by mediate auscultation, however, in connexion with the state of the pulse, and the appearance of the countenance, will in general enable us to recognize the presence of this affection. Between the fifth and sixth cartilages of the ribs the heart "gives a very strong impulse, and is accompanied by a duller sound than natural, and prolonged in proportion as the thickening is more considerable. The contraction of the auricle is very short, productive of little sound, and consequently scarcely perceptible in extreme cases. The sound of the pulsation of the heart is confined to a small extent, being in general scarcely perceptible under the left clavicle, or at the top of the sternum; sometimes it is confined to the point between the cartilages of

* Laennec.

the fifth and seventh ribs; and the impulse of the heart is rarely perceived beyond the same limits, except during palpitation."

Laennec, Bertin, Richerand, and others, consider simple hypertrophy of the left ventricle as peculiarly apt to produce apoplexy; but Dr. Kellie has very ingeniously, though certainly not satisfactorily, controverted this opinion.

When the right ventricle is in a state of hypertrophy, there is more dyspnœa, and the countenance is of a deeper hue, and in nearly all instances the external jugular veins are turgid, and have a manifest pulsating action communicated to them by the regurgitation of the blood. Laennec states that he has never found this symptom absent in hypertrophy of the *right* ventricle. The stethoscope gives the same results as when the left side is affected, with the exception that the heart is felt beating with most force at the *bottom of the sternum*, instead of the space between the cartilages of the fifth and sixth ribs. Laennec asserts, that the place where the action of the heart is most distinctly felt, may be regarded as a certain diagnostic in relation to this subject. When the hypertrophy exists in both ventricles, "the signs consist in a reunion of those that belong to hypertrophy of each side; but those of the right side are almost always more marked."

2. DILATATION OF THE VENTRICLES.

This constitutes the *passive aneurism of the heart* of Corvisart—the ventricles being preternaturally dilated, their parietes attenuated, and the muscular structure, in many instances, so soft that it may be readily broken down by mere pressure between the fingers. The walls of the left ventricle have been found so thin as to measure scarcely two lines at the thickest part, and not more than half a line at the apex; "while the right ventricle is sometimes so completely extenuated as to appear merely composed of a little fat and its investing membrane." Though sometimes confined to one ventricle, dilatation usually affects both at the same time. This condition of the heart is very commonly accompanied by other organic affections of this organ—particularly ossification of the valves, and congenital narrowness of the openings into the aorta or pulmonary artery; and Bertin thinks that the morbid dilatation is always *caused* by these and other circumstances capable of impeding the free course of the blood as it is thrown out by the ventricles. This appears to be the most common of all the organic cardiac diseases, and seems generally to be produced in a very gradual manner.

In dilatation of the ventricles, the pulse is usually soft and weak, and the palpitations of the heart feeble and indistinct. Mr. Forbes thinks that pain or a peculiar feeling of distress in

the region of the heart, extending sometimes to the top of the sternum, between the shoulders and to the left arm, as in angina pectoris, deserve notice as signs of dilatation in the heart. He refers also to headach, an affection which he thinks "he can trace in a great number of cases to this condition of the heart, as its exciting cause." When the *left* ventricle alone is thus affected, the contractions of the heart will be heard very distinctly with a clear and sonorous sound between the cartilages of the fifth and seventh ribs, through the medium of the stethoscope; and "the degree of distinctness of the sound and its extent over the chest are the measure of the dilatation. Thus when the sound of the contraction of the ventricles is as clear as that of the contraction of the auricle, and if it is, at the same time, perceptible on the right side of the back, the dilatation is extreme."—(Laennec.) When the *right* ventricle is in a state of morbid dilatation, the pulse and action of the heart "are nearly the same as in dilatation of the left ventricle." In general the jugulars are distended; the oppression in the chest is apt to be great; anasarcous effusions occur; the countenance is usually livid, and bloody expectoration is very common. Laennec states, that an habitually turgid state of the jugulars, unattended with a pulsatory motion, is the most constant and characteristic "of the *equivocal* signs of this affection." The only constant and truly pathognomonic sign, is the loud sound of the heart, perceived under the lower part of the sternum, and between the cartilages of the fifth and seventh ribs of the right side. The palpitations which accompany this affection consist principally in an increase of the frequency and sound of the contractions, while at the same time, the impulse of the heart's action is frequently feebler than in the ordinary state of the patient." Laennec places but little reliance on percussion, as a means of forming a diagnosis in cases of this kind. In general, percussion at the bottom of the sternum elicits a dull sound.

Dilatation with hypertrophy of the ventricles, is much more common than either of these affections separately, and may exist in one or both ventricles. The contractions of the ventricles in this affection may be very distinctly felt by the hand; "and if we attentively observe the patient we frequently perceive the head, limbs, and even the bed-clothes, strongly shaken at each systole of the heart. If we press on the region of the heart, this organ seems to be irritated by the pressure, and beats more forcibly still." The pulse is full, hard, strong, frequent, and vibrating; the pulsations of the superficial arteries are often visible. Percussion on the region of the heart almost always elicits a dull and obscure sound. With the stethoscope, the pulsations of the heart are heard distinctly over a great extent —they may be perceived below the clavicles, on the sides, and a

little on the left side of the spine. In some instances, when the heart palpitates strongly, besides the impulse of the heart which seems communicated by a large surface, we can distinguish another shock which is sharper, clearer, and shorter, although occurring at the same time, and which seems to strike the walls of the chest with much smaller surface. This blow seems evidently occasioned by the apex of the heart."

3. ANEURISM OF THE AORTA.

Aneurismal dilatations of the aorta are very common. In some instances the dilatation exists without rupture of any of the arterial coats, constituting what authors call *true* aneurism; in others the internal coat is ruptured, forming the kind of arterial dilatation denominated *false* aneurism. Sometimes a large extent of the aorta is in a state of morbid dilatation; but much more commonly the dilatation is confined to the ascending portion and arch. These aneurismal tumours often acquire a very large size. Laennec has seen them "as large as the head of a full grown fœtus." By compressing the heart and lungs these tumours are apt to give rise to very alarming and distressing affections. When the coats of the artery are much diseased, or the dilatation becomes very great, the tumour sometimes bursts and causes immediate death. In some cases the "aneurism compresses the trachea or one of the two bronchial tubes, flattens and eventually destroys a part of them, and death ensues from the rupture of the tumour." The œsophagus may also be thus compressed, but this occurs but seldom. The heart is usually pushed to one side or downwards. Sometimes the aneurism bursts into the air-cells of the lungs; but rupture into the left cavity of the pleura, is by far the most common. Aneurismal tumours of the aorta often destroy the vertebral column to a great depth, by causing gradual absorption, without leaving any other marks of disease, such as caries, &c. When this takes place, the tumour becomes entirely destroyed on the side next the vertebræ—the naked bone forming the posterior wall of the sac. The sternum is also in some cases destroyed, when the aneurism is in the ascending aorta. When the arch of the aorta or the arteria innominata are the seat of the aneurism, the tumour often projects at the top of the sternum, or under the cartilages of the first false ribs of the right side. It is not always the largest aneurisms that most readily make their way externally. Sometimes those of the size of an egg produce this effect, whilst occasionally, those of the size of the head of a full grown fœtus remain quite covered, and are even compressed by the sternum. (Laennec.)

Diagnosis.—The signs of aneurism of the aorta, according to Corvisart, are; inequality of the pulse in both arms; obscure

sound on percussion; a rattling noise in the throat, "and dragging downwards of the larynx when the tumour presses upon the trachea; and a whizzing or rushing at the top of the sternum perceptible by the hand." Laennec, however, places no reliance on these signs, and observes that aneurism of the aorta has no symptoms peculiar to it—the symptoms just noticed "being indicative merely of the change or compression of the adjoining organs. If, however, we find under the sternum or below the right clavicle, the impulse of the circulatory organ isochronous with the pulse, and perceptibly greater than that of the ventricles examined in the region of the heart, we have reason to suspect dilatation of the ascending aorta or arch—the more so as it is extremely rare to feel the impulse of the organ of the circulation beyond the region of the heart, even in cases of the most marked hypertrophy. If this phenomenon is found constant, after repeated examinations, we may consider the diagnosis as certain. Examined with the stethoscope, the aneurismal tumour usually elicits a peculiar purring, thrill, and bellows-like sound. In general, however, aneurism of the aorta can only be recognised with certainty when it shows itself externally; but even when it passes through the walls of the chest, "it is not always distinguishable from other tumours. The origin and progress of this affection are indeed sometimes so obscure as scarcely to give any reason for suspecting its existence;" and the first indication of its presence, is often the death of the individual as instantaneously as if by a pistol-bullet.

Treatment of the Organic Diseases of the Heart.

The greater number of organic diseases of the heart must be regarded as absolutely incurable. This, however, does not apply to hypertrophy and dilatation, whether existing singly or concomitantly with each other; for by a judicious and energetic course of treatment, both these cardiac affections may occasionally be entirely removed, and almost invariably greatly mitigated. M. Laennec observes, that "the greater number of practitioners are too much in the habit of despairing of success in cases of this kind, and therefore content themselves with attacking such urgent symptoms as may arise in its progress; and yet I believe, there is no one who has not succeeded every now and then even by this symptomatising treatment in prolonging for fifteen or twenty years the lives of individuals affected with organic diseases of the heart." Organic affections of the heart, are indeed much more generally regarded as mere subjects of pathological speculation, than as diseases, in some instances at least, susceptible of cure or melioration by proper remedial management. "We think such an estimate," says Dr. Johnson, "not only a false one, but pernicious in its consequences both to the patient and practitioner."

The general, and paramount indication in the treatment of organic cardiac affections—more especially of hypertrophy and morbid dilatation, is *to reduce and keep down uninterruptedly the momentum of the circulation;* and this is to be fulfilled by lessening the mass of the blood by venesection, and a reduction in the quantity and nutrient qualities of the food, and by carefully avoiding every thing which has a tendency to increase the action of the heart and arteries. When there is reason to believe that there exists hypertrophy, the volumn of the circulating fluid should be at once decisively diminished by as large a blood-letting "as the patient can bear without fainting;" and this is to be repeated at intervals of three or four days, until the "palpitations have ceased and the heart yields up a moderate impulse under the stethoscope." In cases where there is simple dilatation, without an increased thickness of the muscular structures of the ventricles, the abstractions of blood can scarcely be carried to a very great extent, or at least be very frequently repeated, without the risk of great prostration or fatal syncope. In cases of this kind, it will nevertheless be highly proper to keep down the mass of the blood, but after one or two effectual bleedings this may be most prudently done by an extremely abstemious mode of living.

A reduction of the ordinary quantity of food, is indispensable to full success in cases of this kind. The good effects of blood-letting will be but temporary, and in general wholly inadequate, unless the rapid generation of new blood be at the same time obviated, by putting the patient on a very spare and diminished allowance of diet. Laennec advises that the food should be diminished to one half, at least, of the ordinary quantity taken by the patient; and it should consist of mild and unirritating articles of diet, at the same time that the mass of the blood is kept down by repeated bleedings. All kinds of stimulating liquids must be rigidly forbidden. This course of depletion and low diet must be steadfastly pursued, the patient at the same time avoiding as much as possible, every thing which may cause inordinate excitement of the circulatory system, particularly exercise, strong mental emotions, and stimulating ingestion. "When the patient has been two months without experiencing palpitations, and without increased impulse of the heart, we may lessen the frequency of the bleedings, and diminish in some degree the severity of the regimen, if the patient is not at all habituated to, or satisfied with his allowance. But we must return to the same means, and with the same rigour, if the augmented impulse of the heart should return." (Laennec.) This method of treating organic affections of the heart was first practised by Valsalva and Albertine.* In

* Morgagni. De Sedibus et Causis Morbor, &c. Epistol. xvii. art. 30.

addition, however, to the foregoing measures, they kept their patients in bed during a period of forty days, and directed the frequent use of laxative enemata. Dr. Forbes states, that he has resorted to this method of treatment with much temporary advantage, and he cites the names of Lancici, Guattini, Sabatier, Pelletan, Corvisart, Hodgson, Bertin, and others, in favour of its usefulness in organic cardiac affections. Morgagni also, speaks of this reducing plan of treatment in affections of this kind with decided approbation ;* and there can be no doubt, indeed, of its direct tendency to lessen the violence of the symptoms, or to effect a cure in hypertrophy of the heart. Laennec observes, that even where the disease has advanced so far as to have induced great dyspnœa, anasarca, and a general cachectic state of the system, " we must nevertheless fearlessly prosecute the plan of starvation and bleeding."

When the symptoms just mentioned, namely, habitual dyspnœa and dropsical effusions occur, *diuretics* will generally assist materially in alleviating the sufferings of the patient. Dropsical effusions into the cavity of the pleura or pericardium almost invariably occur in the progress of organic affections of the heart, and it would appear that the immediate cause of death in many instances are effusions of this kind, impeding the actions of the lungs and heart. Diuretics can therefore rarely be dispensed with in affections of this kind, and they are in fact often decidedly palliative. We may frequently succeed in removing the dropsical effusions from the chest, by the judicious employment of this class of remedies, so as to procure much temporary relief. The effusion, it is true, will generally soon return again, but I have known the life of an individual protracted for four or five years, by occasionally effecting a removal of the dropsical accumulation. I attended an old lady some years ago, who laboured under symptoms of hydrothorax; by low diet and the use of the squill and nitre, in doses of about two grains of the former, to fifteen of the latter, I succeeded in removing the water from her chest, three times in the course of about fifteen months. She finally died suddenly, and on dissection, the heart was not only in a state of remarkable hypertrophy, but the mitral valves were completely ossified. Some writers have strongly recommended digitalis as a diuretic in organic cardiac affections, attended with dropsical effusions ; and from the known powers of this article to curb the action of the heart, it would seem to be peculiarly applicable in cases of this kind. Laennec, nevertheless, does not speak very favourably of its powers in the class of diseases now under consideration. He observes, that he has never found it to control the action of the heart, "even when the dose was carried to the extent

* Morgagni. De Sedibus et Causis Morbor, &c. Epistol. xviii. art. 30.

of producing vomiting and vertigo." Its diuretic powers are equally uncertain, but of its occasional sedative, as well as diuretic influence, no doubt can be entertained, and as both these effects are peculiarly desirable in cases of this kind, it unquestionably deserves a fair trial, where we find other articles inefficient. I have known the infusion of the erigeron hetrerophyllum to produce very active diuresis, and of course advantage in one instance of cardiac disease accompanied by hydrothorax.

Purgatives may also be resorted to with advantage, where the dropsical accumulations become considerable in cardiac affections; and they are more especially necessary where diuretics fail to procure relief. One of the best medicines for this purpose is the following combination, which rarely fails to procure copious watery discharges from the bowels, and at the same time free diuresis.*

When the cardiac affection consists in *simple dilatation*, the pulse, as has already been stated, is generally feeble and compressible, and the depletory measures must therefore be employed with caution. But even in cases of this kind we must endeavour to obviate a plethoric state of the vessels, by an occasional small blood-letting and an abstemious diet. The principal remedies, here, are the ferruginous preparations and the vegetable bitters. These may be beneficially given in union with some of the milder aromatic substances, particularly the infusions of valerian, cat-mint, and of orange flowers. (Laennec.) To curb the action of the heart, digitalis is particularly useful in instances of this kind. From one-fourth to half a grain of the powder of this vegetable may be given every two hours until the frequency of the pulse is moderated, and it should be repeated afterwards in such a way as to keep up a slight sedative impression on the circulatory system. Cases of mere dilatation, however, are seldom permanently benefited by remediate treatment; and the prospect of effecting an entire cure is always exceedingly small. By the employment of chalybeate waters, or some of the officinal preparations of iron, and weak infusions of the tonic vegetable bitters, and a simple and abstemious course of living, with a careful avoidance of all unusual corporeal exertions and spirituous potations, a considerable degree of comfort may be obtained by patients affected in this manner.

"One great principle," says Dr. Forbes, "is always to be kept in view in the treatment of diseases of the heart, namely, the removal of all disorders in other organs which can act as a

* R. Tart. potass. ℥iss.
Sulph. potass. ℥ss.
Pulv. scillæ ℈ii.
Tart. antimoni. gr. ii.—M.
S. Take a tea-spoonful four or five times daily.

source of irritation to the heart." It is particularly important to attend to the gastric and hepatic functions; and hence we find that patients almost always experience some relief when these functions are brought into a healthy condition. "I would lay it down," says the writer just quoted, "as a general rule in chronic affections of the heart, that previously to having recourse to any remedies intended to act directly on it, we ought to be assured that the digestive organs are in a healthy state—that their mucous surfaces are free from irritation—their vascular system not morbidly distended, and that the liver is performing the secretory functions freely and regularly. When derangements of this kind are present—a few leeches to the præcordia or anus, some small doses of oxide of mercury and castor oil, a mild and spare diet, and bodily and mental repose, will often do more to tranquillize the circulation than more active and rougher means. *And indeed, in many cases, more especially in the earlier stages, when the stethoscope gives us but little information, it is not until we have restored the organs to a comparatively healthy condition, that we can know how far the disordered action of the heart depends on sympathy with these, or is the consequence of incipient organic lesion of the heart.*"* Concomitantly with the employment of the above-mentioned tonics, very considerable advantage may in general be derived from an occasional dose of three or four grains of blue pill at night, and a mild laxative in the morning; and to keep up the regular action of the skin, the *tepid* shower-bath will generally be useful.

Sympathetic Affections of the Heart.

Symptoms differing in no material circumstance from those which have already been mentioned as belonging to *organic* affections of the heart, are not unfrequently the result purely of a sympathetic irritation of this organ without any structural lesion whatever. I do not now allude to those cases of *angina pectoris* which arise from metastastic or sympathetic irritation, and which are probably always of a strictly neuralgic character. The heart is liable to be excited into vehement and tumultuous action by a variety of causes not immediately connected with lesion or disorder of its structure; and the most alarming instances of this kind, often result from an irritation located in some remote part of the system. It is of much consequence, in a practical point of view, to keep this, indeed, well-known fact in mind in prescribing for cardiac affections. I have, in several instances, been consulted by persons subject to extremely violent paroxysms of *palpitation*, who were sup-

* Laennec on the Chest. By Dr. Forbes.

posed to be labouring under chronic affection of the heart, and who were completely relieved by a course of treatment calculated to restore the healthy condition of the digestive functions and of the liver. When we find paroxysms of palpitation come on while the patient is quiet, perhaps lying down, without pain in the region of the heart, at the same time that there are symptoms of indigestion, particularly eructations of flatus, there can be but little doubt that the cardiac affection is symptomatic of gastric irritation. Habitual debility and irritation in the digestive organs are particularly apt to give rise to such affections in persons of a plethoric and nervous habit of body. I was consulted, about eighteen months ago, by a gentleman of a very nervous temperament and weak digestive powers, for aid in what he was led to regard as a local affection of the heart. The slightest mental agitation would, occasionally, immediately excite vehement palpitations; and frequently similar paroxysms came on about two hours after taking his meals. He had paid little or no attention to the regulation of his diet, although often disturbed with flatulency, acidity, and other unpleasant sensations in the stomach. He was directed to take four grains of blue pill every other evening, an occasional dose of rhubarb in the morning, and put on a light and digestible diet, with exercise on horseback. In four weeks his complaint left him, and he has not had any return of it since.

Irritation located in other organs, as the kidneys, intestinal canal, uterus, liver, and probably the spleen, sometimes give rise to severe fits of palpitation. They are particularly apt to occur about the age of puberty in young females, or just before the irruption of the menses. Nervous females, more especially those who labour under chronic hysteric affections, are also especially subject to palpitations of the heart. These cases are, in general, easily distinguished from organic affections of the heart, but as structural disease of this organ may be associated with mere sympathetic irritation, it may be well to state more explicitly the signs by which *nervous* palpitation may be distinguished from hypertrophy or dilatation of the heart.

"In nervous palpitation, the first impression conveyed by the stethoscope is, that the heart is not enlarged. The sound, though clear, is not heard loudly over a great extent of the chest; and the impulse, although appearing considerable at first, is really not great, as it never sensibly elevates the head of the observer. This last sign seems to me the most important and certain of any when taken in conjunction with the frequency of the pulsations. These are always quicker than natural, being most frequently from eighty-four to ninety-six in the minute. Nervous palpitations are rarely accompanied by any sign of determination of blood to the head or chest, except in old persons. A feeling of internal agitation, particularly in

the head and abdomen, always accompanies nervous palpitations; and the urine is generally limpid and watery." (Laennec.)

Treatment.—The treatment must of course be regulated according to the particular condition of the general system, and the local organic irritations that may exist. The digestive functions must be particularly attended to, and the sources of intestinal irritation obviated by gentle aperients. In relaxed and weak habits, the tepid bath; a mild, digestible, and nutritious diet; gentle tonics, especially bitters and iron; gentle exercise by gestation; and in young and plethoric subjects, small abstractions of blood; warm pediluvium; and digitalis, will, in general, prove beneficial. Antispasmodics very rarely procure any relief, and indeed much more frequently do injury.

CHAPTER XIX.

NEURALGIA.

Tic Douloureux.

The first account of this affection was given in 1756 under the name of *tic douloureux* by M. André of Versailles. Ten years after this short and rather indistinct description was given, Dr. Fothergill published a paper in which this painful affection is clearly and very circumstantially described under the name of *facei morbus nervorum excrucians*, and since that period, various interesting and elaborate essays, and a multitude of cases, illustrating the character and treatment of this disease, have been given to the public. The term *neuralgia*, which was, I believe, first given to the disease by Dr. Meglin of Strasburg, is now generally, and certainly with much propriety, preferred to the name *tic douloureux*.

Neuralgia is usually divided into different species, according to the seat of this affection; but the fact, now well ascertained, that its attacks are confined to no particular nerve or system of nerves, that it may occur in almost every sentient structure of the body, in the cerebro-spinal, the pneumo-gastric and phrenic nerves, and even in the ganglionic nerves arising from the solar plexus, renders the propriety of such divisions as specific distinctions very doubtful; and the more so, as they do not appear to involve any essential peculiarities either in a pathological or therapeutic point of view. Unquestionably,

however, certain nerves are much more liable to become the seat of this affection than others; and this is especially the case with the three grand divisions of the fifth, and the facial portion of the seventh pair of cerebral nerves.

Symptoms.—The pain in neuralgic affections is very peculiar. It is extremely acute, and darts like lightning from its more fixed point along the course of the nerves. It comes on in sudden paroxysms, with longer or shorter intervals of more or less complete freedom from suffering. In general, much pain is experienced throughout the whole paroxysm, with frequent transitory shocks of darting pain, so extremely agonizing as often to cause a temporary loss of reason and consciousness. Occasionally, the paroxysm consists of a succession of transient fits of pain coming on with the suddenness of an electric shock with short intervals of comparative ease. During the paroxysms, the surrounding parts are extremely sensitive or tender to the touch; and it is a remarkable circumstance, that the slightest touch, in many instances, causes much more suffering than firm pressure; the former, generally, instantaneously bringing on a shock of the piercing nervous pain. In general, the pain is attended with considerable turgescence of the blood-vessels in the immediate neighbourhood of the affected part; and this vascular engorgement, says Dr. Macculloch, sometimes "amounts to a species of inflammation, resembling that of rheumatism." Much general soreness in the part is usually left after the subsidence of the acute neuralgic pains; but in some cases only a little tenderness remains, which gradually subsides and leaves the patient in his ordinary state of health. In very violent attacks of the disease, we generally find the neighbouring muscles affected with spasms, and occasionally spasmodic twitches occur in the muscles of parts distant from the place where the pain is located. When the disease occurs in the nerves of the face, the saliva is often secreted very copiously, and in nearly all instances of this kind, there is a profuse flow of tears from the eyes during the paroxysms. In individuals of a nervous temperament it is not uncommon to observe sympathetic affections of other and distant nerves with which those affected have no other connexion than that which exists through the medium of the sensorium commune.

In some cases the paroxysms are strictly periodical in their recurrence, with regular intermissions of comparative health, the type being almost always quotidian. This periodicity of the paroxysms occurs only in what may be termed the acute or recent form of the disease; and is particularly pointed out by Dr. Macculloch as an evidence of the affinity or rather identity of this affection with intermitting fever. Sometimes the disease assumes a chronic character, continuing in irregularly recurring paroxysms for months or even years, with scarcely any intervals of entire freedom from uneasiness, ill-health, or

suffering; and this is especially apt to be the case, when the disease occurs in consequence of some mechanical injury of a nerve.

This affection occurs much more frequently in the face than in any other part of the body. When the portio dura is affected the pain usually commences on the side of the face near the ear, and darts along the ramifications of the nerve, to the angle of the jaw, the alæ of the nose, the angle of the mouth, external canthus of the eye, and along the temple to the forehead. Sometimes the pain radiates from a point on the cheek just below the orbit of the eye and passes to the side of the nose, the upper lip, teeth, gums, and temple, in which case the disease is seated in the second branch of the fifth pair of nerves. When the principal pain is experienced in the internal canthus of the eye, forehead, eye-lids, and in the ball of the eye, we may presume that the first branch of the fifth pair is affected; and in cases where the tongue and lower jaw are the seat of much pain, the neuralgic irritation extends to the third branch of the trigeminus. Sometimes the pain occurs in the scalp; and I have seen an instance of extreme violence, in which the pains were most severely felt behind the ear and along the scalp of the occiput and the posterior portion of the temporal bone.

The *optic nerve*, also, has been known to be affected with neuralgia. Dr. Macculloch mentions a case in which the pain in the eye was described by the patient as if a red-hot needle had been passed through its centre.* The decidedly neuralgic character of this pain was evident from its having occurred the moment after an attack of neuralgia in the upper jaw had ceased.

Neuralgia in the nerves of the extremities is by no means uncommon. Dr. Macculloch mentions a severe case that occurred in the radial nerve which runs along the metacarpal bone of the fore-finger. The pain was confined to a space "which a pea could have covered," and continued during a period of four months. Mr. Abernethy has related a striking instance of neuralgia, which affected the superficial nerves under and adjoining the inner edge of the nail of the ring-finger of the hand;† and Dr. Pearson has given an account of a remarkable case affecting the extremity of the left thumb.‡

The occurrence of this affection in the nerves of *the feet and legs* has been frequently noticed. I have lately seen an instance of this kind, which had already lasted upwards of six months. Dr. Good, who makes a distinct species of such cases,

* An Essay on the Remittent and Intermittent Diseases, including, generically, Marsh Fever and Neuralgia, &c. By John Macculloch, M. D.

† Surgical Works, vol. ii. p. 18.

‡ Med. Chir. Transact. vol. viii. Part 1.

under the term *neuralgia pedis*, describes an instance of this kind, which continued for several years. The paroxysms were transient, of uncertain recurrence, and so severe as nearly to cause fainting, darting up the calf of the leg towards the knee, and downwards into the toes. Dr. Macculloch relates instances of neuralgia of the *knee*. In two extremely violent cases the pain was situated immediately over the margin of the head of the tibia, and the affected part was not more than an inch in area. In another case, imitating the double tertian type, "there was on one day pain in both knees, and on the alternating day a pain in one arm;" and in this way the disease continued a long time. Neuralgic pains in this joint, says this writer, have been mistaken for scrofulous affections, "and in some cases that had lasted five years, as the pain was very severe, the surprise had long been that no swelling could be discovered by the touch." This affection is what Mr. Brodie has described under the name of *hysterical white swelling;* and he appears to think "that nine out of ten of those unfortunate young women who have been *doctored* of late years for *spinal* diseases, have really laboured under nothing but *hysterical pains* of the back."*

The *tibia* has been frequently the seat of extremely violent neuralgia; and it has also occurred in the *thigh*, particularly in the anterior crural nerve, shooting down with great severity, from near the groin to the foot or toes.

The occurrence of neuralgia in *the breasts of females* has of late years been noticed by several writers. The third species of Dr. Good's subdivision of this affection, (*neuralgiæ mammæ*) is founded upon this location of the disease. He describes an interesting case of this kind. The breast, he says, was "full-formed and soft, without the slightest degree of inflammation or hardness. When the paroxysm of pain was not present it would bear pressure without inconvenience, but during the pain the whole breast was acutely sensible. The paroxysms returned at first five or six times a day and were transient, but as the disease became more fixed it became also more severe and extensive, for the agonizing fits at length recurred as often as once an hour and sometimes more frequently." Dr. Addison says, that neuralgic pain *under the mammæ, or under the margin of the ribs of the left side*, is far from being uncommon in females. This pain, he observes, is "very circumscribed, and will often last for weeks, or even months, with but little intermission. It is often associated with palpitation of the heart, or what is much more usual, with unnatural pulsation of the organ, i. e. the patient is conscious of the heart's action, or she

* Med. Chir. Rev. Nov. 1828, p. 58.

feels as if its impulse were communicated to a part so sensitive as to excite distinct sensation.*

The *internal organs*, as was observed above, are no less liable to neuralgic affections than the external parts. Of the *neuralgia of the heart*, I have already spoken under the head of angina pectoris, for it will scarcely admit of a doubt, that in some instances at least, this appalling affection is strictly of a neuralgic character. Its occurrence in the abdominal viscera appears also to be much more common than is generally suspected. Dr. Macculloch has met with a well-marked instance of neuralgia in the rectum. There is an affection of this kind which occasionally occurs at the extremity of the rectum or coccygis, immediately after parturition, causing indescribable suffering to the patient, and which scarcely any dose of laudanum is adequate to allay. Dr. Dewees, in his midwifery, mentions a remarkable instance of this kind, and I have not long since met with one equally striking. The pain continued for two hours before it began to decline.

The painful affection usually termed gastralgia, is probably purely neuralgic in its nature. In this variety of the disease, the pain is paroxysmal, sometimes quotidian, and usually radiates from the epigastrium to the thoracic parietes, the back, and to the shoulders. The tongue is white, the saliva abundant, without thirst, and epigastric tenderness on pressure. Immediately after eating the pain generally abates for some time, but in the course of one, two, or even three hours afterwards, it is renewed with a feeling of weight and distress in the epigastrium, as if there was a foreign body in the stomach. Nausea, borborygmi, flatulent colic, and eructations of air, are usually experienced some hours after eating. There is generally much constipation, and the urine is usually pale and small in quantity. In violent and protracted cases, difficulty of breathing, palpitation of the heart, wandering pains, and a peculiar sensation of coldness in the arms, loins, and lower extremities are wont to occur. In the morning the patient commonly gets up refreshed, and feels quite well until breakfast renews the gastric pains. Dr. Prus has recently reported a very interesting case of neuralgia of the stomach, which was brought on by violent mental emotion. The patient, a female, was affected with excruciating pains in the epigastrium which came on daily in paroxysms, between the hours of three and half-past seven P. M. *Fourteen* years after the commencement of her sufferings, the patient consulted Dr. P. The epigastric pain was removed in five days by full doses of quinine, given during

* Observations on the Disorders of Females; connected with Uterine Irritation. By Thomas Addison, M. D. &c. Lond. 1830.

the intermission, and the patient appeared to be entirely cured. On the twenty-second day afterwards, however, intense pain occurred in the course of the infra-orbital nerve; soon afterwards it seated itself in the cubital nerve of one arm, where it remained but a very short time. It then returned to the face. A blister was now applied beneath each trochanter. After this the sciatic nerves of the right side became violently painful. Blisters were applied along the course of the nerve, and in a few days more the pain suddenly shifted to the *left* sciatic nerve, and soon afterwards disappeared altogether.* The *kidneys*, also, may become the seat of this affection. Dr. Macculloch states, that he has met with an unequivocal instance of this kind. There is an exceedingly painful affection which occurs in the right aliac region, usually confined to a very circumscribed space, and which has been generally regarded as the result of calculous irritation in the ureters, but which appears very manifestly, I think, to be purely neuralgic. I have met with five or six cases of this kind, several of which continued to recur daily for two or three months. Its mere *nervous* character seems to be demonstrated by the strict periodicity which it observes in its recurrence; although in most instances there is retraction of the testicle on the affected side as in calculous irritation, without however any difficulty or diminution of the discharge of urine.

The uterus also is liable to become the seat of extremely painful affections of this kind in females of a nervous or hysterical temperament. My friend, Dr. Samuel M'Clellan, lately attended a young lady, who for several months was daily affected with sudden paroxysms of what he justly regarded neuralgia in the region of the uterus. The shocks were so exceedingly agonizing, as in some paroxysms almost to deprive the patient of reason. At times, instead of the uterus, other parts of the body were seized with similar pains, and the whole nervous system was in a state of morbid irritability. Mr. Shaw has related a case, where the neuralgic affection was seated in the ulnar nerve from the elbow to the little finger. After some local rubefacient applications and the internal use of blue pill and the volatile tincture of valerian, the pain abated in the arm; but the patient (a female) was attacked with severe pains in the *uterus*. It would seem too that neuralgia sometimes invades the *bladder*. In a conversation which I lately had with Dr. Parrish, he mentioned an instance that occurred in his practice, which he called *tic douloureux* of the bladder.

Dr. Macculloch has devoted a chapter of his work to the

* Med. Chir. Rev. March, 1829, p. 553.

consideration of neuralgic *affections of the glands;* and Dr. Jolly has published an interesting memoir on what he calls *visceral neuralgia.* The cases, however, that are mentioned by those writers, as instances of glandular or visceral neuralgia, though unequivocally the result of *nervous* irritation, cannot with propriety be ranked with the neuralgic affections; since little or no *pain* was present—the prominent symptoms having been either functional disorder or spasm of the muscular structure of the parts affected. Thus Dr. Macculloch mentions a case, as *neuralgia* of the kidneys, which was characterized by a strictly periodical recurrence of profuse diabetes; and the cases related by Dr. Jolly consisted of periodical hiccup, in one instance with temporary aphonia, or of paroxysmal spasmodic eructations of flatus from the stomach, without pain, &c. It is certainly a solecism to apply the term *neuralgia* to such affections, for the term implies *pain,* and ought in strict propriety to be confined to *painful* nervous irritations.

M. Martinet has related some singular instances of neuralgia,* which assumed the general appearances of cerebral disease. One case commenced suddenly with incomplete paralysis of the right lower extremity, attended with pain running along the sciatic nerve; next a dull pain, with formication, occurred in the region of the loins—in a few days afterwards pains radiating along the temples, forehead, and upper eye-lid of the right side came on—then distortion of the mouth to the left side, embarrassment of speech, with pain in the facial nerves; darting pains along the scalp, deep-seated cephalalgia in the right side of the head, and finally uneasiness in the epigastrium, coated tongue, &c. The case was cured by leeching and purgatives. He mentions another instance still more closely similating disease of the brain. A very singular case is related by M. Hellis, of Rouen. The patient, a young man aged about 15, at first felt a dull pain near the last dorsal vertebræ, which soon extended itself to the epigastrium, attended with hiccup. In this situation he continued with occasional intervals of weeks or months, for several years: at last the pains did not confine themselves to the back and epigastrium, but darted through the chest, abdomen, and down the legs to the toes. It also affected the upper extremities, and passed along the course of the nerves to the extremities of the fingers. On closing the hand, the hiccup and the pain would cease, but "on extending a single finger it would appear, and quick as lightning traverse the parts just mentioned."†

* Rev. Medicale, Janvier, 1824.

† Med. Chir. Rev. Octr. 1826. Journal Général de Med. April, 1826.

From the foregoing facts, we perceive that neuralgic irritation is by no means confined to a few points of attack; and we shall presently make it appear that its causes are scarcely less various than the parts which are susceptible of becoming its seat.

Causes and Pathology.—Dr. Macculloch strenuously insists on the *malarious* origin of neuralgia, and there can scarcely exist a doubt, indeed, that in many instances, neuralgic affections are nothing more than masked agues from the influence of koino-miasmata. In miasmatic districts, the occurrence of affections of this kind is far from being uncommon; and their close affinity to intermitting fever seems to be sufficiently demonstrated by the strict periodicity of their character, and the remedies most successful in removing them, being the same that are most effectual also for the cure of fully developed intermittents. The symptoms too, which on a careful examination may be detected in many instances of periodical neuralgia just before the accession of the paroxysms, indicate the close alliance between them and intermittents. "Immediately before the attack," says Dr. M., "if the pulse be examined, it will be found to put on that character which it possesses in the cold stage of intermittents, while through the progress of the paroxysm it passes through the other analogous changes." There are also, most commonly "some indications of a cold stage, generally obscure, it is true, as is the case in most of the anomalous and chronic intermittents, but still discernible." There is much reason to believe that individuals who have laboured under intermittents, may afterwards, even at remote periods, have relapses of the disease in the form of periodical neuralgia. I have seen two instances of this kind, of great severity, which yielded readily to the powers of arsenic given during the intermissions. True as it undoubtedly is, that many cases of this affection arise from the influence of koino-miasmata, and partake of the nature of intermitting fever, it is nevertheless far from being so generally dependent on this cause as is alleged by Dr. Macculloch. It is manifest, indeed, from the many cases that have been published of late years, that this painful affection may be originated by a variety of very distinct causes, some of them of a general, and others of a strictly local character. Sometimes it appears to be dependent on a morbid irritability and irritation in the intestinal canal; and this is probably most commonly the case when the affection occurs in the nerves of the mammæ, on the side of the head, and in the heart, producing angina pectoris. I have seen an instance of excruciating pain and tenderness in the left breast, between the nipple and the axilla, without inflammation, swelling, or redness, in a lady habitually affected with gastric disturbance. It

was removed by a course of simple diet, mild tonics, blue pill, aperients, and laxative enemata.

The occurrence of neuralgia from *mechanical injury* of the nerves, is by no means uncommon. In many instances of this kind, the neuralgic pains are seated at a distance from the part where the primary irritation or injury exists; but in others, the affection is located immediately in the injured nervous ramifications. Sir Henry Halford has lately adduced some observations which would seem to show that facial neuralgia is occasionally excited by *lesion of bone*. In one of the cases he relates, "there was an exostosis of the alveolar process—in another there was disease of the antrum highmorianum, and in a third, and the most remarkable of all, there was a prodigious deposit on the internal surface of the skull, like frost-work, which must have caused great pressure on the brain. Dr. Pemberton, previously to the development of the neuralgia of which he died, was twice affected with abscess in the frontal sinuses."* In a case of neuralgia of the face, Dessault found the foramen through which the nerve passed in a diseased state.

Many cases are on record where neuralgia was produced by accidental injuries, such as wounds, bruises, &c. M. Feron has related an interesting instance of this affection which was produced by a bite from a little girl in a state of delirium, inflicted on the back of the second phalanx of the little finger of the left hand in an old lady. In a few days excruciating pain was experienced in the little finger, spreading successively to the hand, forearm, and elbow, along the tract of the cubital nerve. After cauterizing the wound, the pain extended to the axilla, and increased in severity; at last a sense of tricture and fulness or stuffing in the chest ensued, which was soon succeeded by violent cardialgia and vomiting. These symptoms, recurring in paroxysms, lasted six months.† A most distressing case is related, which was caused by a wound of the hand from the explosion of gunpowder. Amputation of the arm was twice performed, but the disease always returned in the stump as soon as it was cicatrized. The patient visited Paris, London, and Edinburgh, where he consulted the most eminent of the faculty, but he derived no permanent advantage from the measures that were recommended. I once saw a case of great violence, which was produced by a fracture of the forearm. I have not heard whether the disease was ultimately removed or not. Dr. Jeffray has recorded a very aggravated case, which was caused by a wound in the cheek by a piece of chinaware,

* Med. Chir. Rev. April, 1828.

† Med. Chir. Rev. Sept. 1821—from the Journal Complement, Mai, 1820.

a small portion of which remained imbedded in the wound. It may also arise from the irritation of a carious tooth. Mr. Swan has given the history of a case of facial neuralgia, which was produced by a blow on the right eye.

With regard to the proximate cause of neuralgic affections, pathologists have expressed a diversity of opinions. Dr. Parry attributed the pain to "increased vascularity or determination of blood—perhaps amounting to inflammation—of the neurilema or vascular membranous envelope of the affected nerves." M. Vaidy, who has published a valuable memoir on this disease, entertains a similar view of its pathology. He considers all neuralgic affections as consisting in inflammation of the nervous tissues.* The affected nerve, or its neurileme, has indeed sometimes been found preternaturally vascular and injected; yet these conditions may be the *consequence*, and not the cause of the neuralgic irritation. The nerves, says Mr. Swan, are liable "to become enlarged and inflamed from irritation, just as muscles are from continued action, but dissection, he says, has not shown those depositions of coagulable lymph and structural changes which are produced by continued inflammations of the other parts of the body, and of the nerves themselves in stumps and portions along the seat of inflammatory action.†" The general opinion at present is, that this painful affection is frequently the result of mere nervous irritation, without any necessary connexion with vascular congestion or inflammation. Without doubt, however, inflammation or increased vascularity of the neurileme may give rise to the disease; and it may, I think, be assumed as a fact, that neuralgia may depend on different causes—on local inflammation or congestion of the affected nerve—on organic disease of the brain—and most commonly on a sympathetic irritation, from latent irritation in other parts or organs.

Diagnosis.—The diagnosis of neuralgia is not, in general, attended with difficulty, unless it be seated in the internal organs. The pain, as has been stated, is darting, extremely acute, paroxysmal, and usually transient, coming on with the suddenness of an electric shock, and ceasing as instantaneously. These circumstances, together with the exceeding aptitude of the slightest touch or motion of the affected part to renew the paroxysm of pain, and the entire absence of swelling or inflammation, and usually of heat in the part, and finally, the transient radiations of the pain along the course of the nerves, are sufficient to distinguish this disease from other painful affections.

Treatment.—The mode of treatment must of course be di-

* Journ. Complement, Dec. 1820.

† Dissertation on the Treatment of Morbid Local Affections of the Nerves. By Joseph Swan, &c.

versified, according to the nature of the exciting cause, and the extent and situation of the neuralgic affection. A case produced by local injury of the nerve, will scarcely yield to the same treatment that will be required for one which arises from the influence of miasmata; and an instance depending on this latter cause, will probably yield to remedies that would fail in one which originates from gastric irritation and a general morbid irritability of the system. Formerly, considerable reliance was placed on dividing the affected nerve; but although no inconsiderable number of cases have been related where this operation effected a cure, it is but seldom that it can be resorted to, on account of the number and situation of the affected nervous ramifications; and where the disease depends on a sympathetic irritation, or a local injury nearer the origin of the nerve than can be reached with the scalpel, there would appear to be but very little or no chance of advantage from this measure. Mr. Swan, in speaking of this operation when the portio dura is affected, says, that the attempt to divide the trunk of this nerve is not only attended with much difficulty, but also with danger; and "to divide all the branches that go to the face, requires an incision from the zygoma to the angle of the jaw. The greatest portion may be divided by making an incision down to the jaw a little below the zygoma, and thus the main branches of the nerve will be cut through; and if the patient is not relieved by the operation, another incision may be made quite to the angle of the jaw, by which nearly all the principal branches will be divided." When the disease is located in the third branch of the trigeminus, in which case the pain is felt in the side of the tongue and the teeth, the attempt to divide the nerve would be dangerous. When, however, the pain occurs in the lower lip, the nerve may be divided as it passes out of the lower jaw, by passing the point of a knife between the lip and the bone at the first bicuspid down to the foramen and moving it a little from side to side.* Notwithstanding the difficulty and hazard of dividing the trunk of the portio dura, a very interesting example of the performance of this operation by Dr. Warren of Boston is related in the sixth volume of the Medical Recorder. The patient had laboured under the disease for fourteen years, and had already undergone the operation of dividing the infra-orbital nerve, and the first branch of the trigeminus. The pain passed from a point near the ear over the side of the face. "A dissection was made between the back part of the parotid gland and the mastoid process," the nerve exposed, and a portion removed. The pain nevertheless returned. He now cut down over the side of the jaw, through the parotid gland masseter muscle, removed a portion of the bone with the trephine,

* Loc. citat. p. 56.

and exposed the nerve where it enters the lower jaw, and removed a piece half an inch long. This completed the cure.

In cases of neuralgia in the nerves of the extremities, the *removal* of a portion of the affected nerve has been practised with success in no inconsiderable number of instances. Mr. Earle has reported a case,* where the complaint was cured by cutting out a portion of the nerve; and Mr. Abernethy cured a case seated in the integuments of a finger by removing about half an inch of the digital nerve. The propriety of *removing*, instead of merely dividing the nerve, is founded in part, on experience, and on the fact ascertained by Sir Everard Home and others, that when a nerve is merely divided, and the extremities left close together, they regain the power of transmitting the nervous influence in a few days. M. Lisfranc cured a case of neuralgia of the scalp, caused by an external injury, "by removing an oval piece of scalp, including the seat of the pain, three inches in length and two in breadth."† The practice of dividing the neuralgic nerve has, however, so frequently, we may say so generally, failed, that it is now almost entirely abandoned by practitioners. Where the disease is confined to a single branch and arises from local irritation, it may, nevertheless, be resorted to with some prospect of success; and ought most assuredly to be employed where all other remediate measures are ineffectual.

In recent cases depending on a constitutional cause, where the paroxysms recur *periodically*, tonics, particularly quinine and arsenic, will most frequently remove the disease. Instances of this kind, as has been stated, are generally of malarious origin, and will commonly yield to the same mode of treatment that is usually adopted for the removal of intermitting fever. Indeed, neuralgia of this kind sometimes disappears spontaneously, just as intermittents are known to do, without any medicine. About two years ago, I attended a lady labouring under quotidian paroxysms of the most excruciating neuralgic pains in the portio dura. The autumn previous she had been affected with protracted intermittent, and as she had taken a great deal of quinine, which always affected her head very disagreeably, she now obstinately refused to take it. I therefore directed a blister to be laid on the epigastrium, and put her on a very simple farinaceous diet. In three days the neuralgia ceased, and has not troubled her since.

Dr. Macculloch, whose experience in cases of this kind, appears to have been very extensive, says that the *Peruvian bark* and *arsenic* are decidedly the most efficacious remedies in *intermittent* neuralgia; and this observation is confirmed by

* Med. Chir. Transact. vol. vii.
† Med. Chir. Rev. July 1826.

the experience of others. Mr. Shaw has used bark with marked success in neuralgic complaints; and Dr. Kerrison asserts, that according to his experience, cinchona is the most useful medicine we possess in cases of this kind. M. Vaidy also cured an instance of facial neuralgia, which came on with extreme violence every day at 12 o'clock, and lasted four or five hours, by means of the cinchona.* Five or six years ago, I met with a few cases of well-marked *intermitting* facial neuralgia, which yielded readily to large doses of quinine; but in one instance of a strictly quotidian type, which more recently came under my care, neither this remedy, nor arsenic, made the slightest impression on the disease. Many cases might be collected from recent medical publications, illustrative of the good effects of tonics in periodical neuralgia. M. M. Ribes and Dupre have reported an interesting case which was speedily removed by the *quinine*;† and M. Piédagnel, succeeded in a very short time in curing this affection with this tonic.‡ Dr. Lalaurie, physician to the Central House of Correction at Eysson, has related an instance of neuralgia which originated from a puncture of a ramification of the frontal nerve, and which had continued for *ten* years. *The attacks came on periodically.* The patient was ordered to take every morning the sixteenth part of a mass, composed of a drachm of white soap and a grain of *arsenious acid;* drinking immediately afterwards three cups of water containing mucilage and honey. This was repeated every other day, and in two weeks the disease was entirely removed. From the observations that have been published, it appears, therefore, that in *intermittent,* quotidian, or tertian neuralgia,—and in these only, do the tonics just mentioned manifest any particular curative powers; and in all such cases, whether originating from general or local causes, they ought certainly to be fully tried before recourse is had to other modes of treatment.

No article of late years has attracted more attention as a remedy in neuralgia than the *carbonate of iron.* Mr. Hutchinson has published a small work on *tic douloureux,* in which he relates a considerable number of well-marked cases, that yielded to the powers of this remedy.§ It has also been used with success in this affection by Mr. Richmond,‖ Dr. Crawford,¶ Dr. Evans,** Dr. Brothwick,†† Dr. Davis, Dr. Yeates, Dr. Ayre,

* Journal Complement, December, 1820.
† Magendie's Journal de Physiologie—1822.
‡ Lond. Med. Repository—1821.
§ Cases of Tic Douloureux successfully treated. By B. Hutchinson. London, 1820.
‖ Lond. Med. and Phys. Jour. No. cclxxi. p. 271.
¶ Ibid. 1823.
** Edin. Med. and Surg. Jour. Jan. 1824.
†† Ibid.

Dr. Marsden, Dr. Payne, Dr. Marshall Hall, and others. The cases related by Dr. Evans furnish very striking testimony of the sanative powers of this article even in very protracted instances, and of great severity. It should be given in large doses—from one to two drachms, three times daily. This remedy appears to be best adapted to intermittent cases, attended with debility of the digestive powers. It is not, however, superior to the quinine or arsenic in such cases. I have in several instances resorted to it, but only with partial advantage. In one of these cases the disease was afterwards removed with the quinine.

Some of the *narcotics*, also, have been strongly recommended for the cure of neuralgic affections. The stramonium, especially, possesses very considerable powers against such pains. It was some years ago recommended by Dr. Marcet as a highly valuable medicine in these and other painful affections unattended with an inflammatory diathesis, and it is unquestionably entitled to much attention as a remedy in cases of this kind. Dr. Bigbee* has published a paper illustrative of the valuable powers of this article in painful affections of the nerves, and we have also the testimony of Dr. Elliottson, among others, in favour of its virtues in neuralgic complaints.† I have employed it in four cases of recent neuralgia, in two of which I succeeded in the course of three or four days in completely removing the disease. One fourth of a grain may be given every four hours, until vertigo is produced, when its use must be omitted, and resumed as soon as the vertigo subsides. It has appeared to me most effectual in cases attended with, and probably mainly dependent on a general irritable condition of the nervous system, or on what may be termed hysteric neuralgic pains. It must not be forgotten, however, that when given in repeated and active doses, it is very apt to produce a species of maniacal delirium, strongly resembling delirium tremens. In two instances, in which I prescribed it for chronic rheumatism, it had this effect. *The belladonna*, too, has had its advocates as a remedy in neuralgic complaints; but its powers are certainly much inferior to those of stramonium in this respect. Mr. Rodd states that he has cured several cases of painful affections of the nerves by the external application of a strong aqueous solution of the extract of belladonna to the skin over the affected part. In one instance, where the pain was experienced along the course of the sciatic nerve from the hip to the foot, almost immediate relief was procured by rubbing the tract of the pain with a solution of two drachms of the extract of belladonna in an ounce of water. Another instance of a similar character

* Edin. Med. Chir. Trans. vol. i. p. 285.
† Med. Chir. Rev. June, 1828.

was gradually removed in the same manner.* Mr. Baily speaks highly of the powers of this narcotic in affections of this kind. He has related nearly thirty cases in which this medicine was found more or less successful. Of the extract he began with three grains, and repeated it in diminished doses until relief was procured. In some instances he employed the tincture.

The oil of turpentine, likewise, has been used with success in certain neuralgic affections. M. Sedillot† cured several instances of sciatic neuralgia, by administering this article in drachm doses once or twice daily; and Dr. Wilson, in a communication to Dr. Johnson, states that "in three cases of neuralgic disease which had lately come under his care, a cure was effected by the combination of calomel, opium, and the *oil of turpentine*. A pill containing from two to four grains of calomel, and one or two grains of opium, was given each night at bed-time, and next morning one or two drachms of oil of turpentine mixed with a little honey. In each of the three cases a complete and permanent cure was effected by this plan, and in a moderate space of time. M. Recamier, of the Hotel Dieu, also speaks in high terms of the efficacy of the oil of turpentine in neuralgia.

Leeching has of late years been employed in neuralgic affections; and from some accounts that have been published, it would appear that benefit may be derived from this measure in certain cases of the disease. Without doubt, where the malady depends on an inflammatory condition of the nerve or its neurileme, the local abstraction of blood is well calculated to do good; but it is by no means probable, I think, that any advantage can be derived from this measure in cases connected or dependent on constitutional causes, and there are instances on record where it did much harm, as in the remarkable case related by Dr. Yeates.‡ M. Vaidy has reported cases which were cured by the application of leeches along the course of the nerve. (*loc. cit.*)

Of the *local applications* that have been employed in this affection, *moxa* is without doubt the most efficacious. Larrey relates cases that were removed by this remedy; and Dr. Barras has given an account of a case of neuralgia of the spermatic cord which yielded to this application. M. Feron has reported a highly interesting instance of neuralgia of the ulnar nerve, which was removed almost immediately by the applica-

* Transactions of the Surgeons-Apothecaries, vol. i. article vi. On the Treatment of Painful Affections of the Nerves, arising from Local Injury. By Geo. R. Todd, Esq. &c.

† Medico-Chir. Review.

‡ A History of a severe case of Neuralgia, occupying the nerves of the right thigh, leg, and foot.

tion of moxa near the elbow. In four or five months, however, the disease returned; but the moxa now procured only a temporary mitigation of the patient's sufferings. Larrey advises that the moxa be applied repeatedly if the first applications afford only partial relief. He has repeated the burning ten or twelve times, and followed the pain with the moxa wherever it fixed itself, before the disease was completely subdued.

M. Vaidy has mentioned a case of neuralgia of the sciatic nerve, from the hip to the foot, which was speedily and permanently removed by a *tight bandage* applied over the whole extremity. *Acupuncturation* has also been resorted to with success in this painful affection. M. Pelletan relates a considerable number of neuralgic cases that were completely cured by one or two operations of acupuncture. It does not appear, however, that it has yet been employed with success in facial neuralgia. In the cases mentioned by M. Pelletan, the crural, the sciatic, and the plantar nerves, and in one instance the superficial nerves of the chest, were affected.*

A case of facial neuralgia is related by Mr. Beddingfield,† in which the application of cerussa, with the view of paralyzing the affected nerve, proved entirely successful. The case was under the direction of Sir Astley Cooper, and had previously resisted every other remedy. Two scruples of the cerussa, formed into an ointment, were rubbed on the affected cheek every morning about an hour before the paroxysm was expected. By continuing this application daily for a month, the disease was completely removed.

The application of a *strong magnet* also, has in a few instances promptly removed the pain in neuralgia of the face. M. Alibert, in his treatise on materia medica, mentions some examples of this kind; and a remarkable case of this kind occurred in my own practice about eighteen months ago. A gentleman of this place daily experienced the most agonizing paroxysms of neuralgic pain in the ramifications of the portio dura. Quinine, the carbonate of iron, arsenic, and belladonna were used, but without the least advantage. At last I sent him a strong horse-shoe magnet, and directed him to keep it applied on the side of the face, so as to bring the two poles opposite to the meatus auditorius. He did so. In about two hours after the magnet was applied the pain became more severe than ever, so as nearly to deprive the patient of his consciousness. Suddenly, however, the pain ceased entirely, and I found him calm and cheerful in the evening. On the following day the magnet was again applied, and the paroxysm was very

* Revue Medicale, Janvier, 1825; and Archives Generales, Fevrier, 1825.

† Compendium of Medical Practice.

slight, and not more than one third the usual duration. In the course of five or six days further the disease was wholly removed. Was this a mere coincidence, or did the magnet control the neuralgic irritation? It is certain that intermitting neuralgia sometimes terminates spontaneously, and it is *possible* that this may have been the case in the present instance.

An attention to proper dietetic regulations, and to restoration or maintenance of the regular action of the liver and bowels, is of much importance in affections of this kind—more especially where the disease is attended with manifest symptoms of gastric derangement.

*Gastralgia.**—For mitigating or removing this painful and distressing affection, which appears to be purely neuralgic, various remedies have been recommended; but they have seldom afforded more than temporary relief. *Opium* in full doses will indeed always procure perfect ease for a time; and there are few who are much affected with this complaint, that do not find it necessary to resort to this narcotic. The misfortune, however, is, that those who have once experienced the delightful effects of this medicine when suffering under an attack of gastrodynia, will repeat it again and again whenever the pain returns, and as the dose must be progressively augmented, the unfortunate sufferer will almost inevitably contract a habit of taking it in enormous and ruinous quantities. Dr. Dawson† observes, "it may be said that opium is a great evil, it is so; a most painful necessity; but it is a far greater evil to pass one half of life in excruciating pain, and the other half in miserable anticipation. The gastrodynic sufferer has a choice of evils, for him there is no middle path; he must either contentedly endure a pain which makes life a burthen and renders ta-

* Although I have already described this affection, I may add the following description of its symptoms, as given by Dr. Dawson. "The time and accession of the paroxysm, and the duration of it are alike uncertain. A hearty meal or a copious drink of a stimulating fluid will sometimes bring temporary relief. The pain is aggravated by walking, and slightly mitigated by reclining on the left side and applying pressure by the hand. In some cases the pain is always in the stomach only; but in others it does occasionally for a short period quit that organ, and as it were, fancifully and indifferently affects the back, sides of the spine, or the integuments covering the sternum and ribs. The pain itself is of a peculiar and even of a varying nature. It is not acute, it is not lancinating, it is not spasmodic, it is neither sickening nor dragging. It is of an excruciating aching kind, and of the most soul-depressing nature. I have known a gentleman lie on the floor in agony, and have three distinct attacks of three, four, or six hours, during twenty-four hours. Sometimes the stomach feels empty; at others it seems distended, and gives rise to bitter or saltish eructations. Yet the patient, even on the rack of pain, is not ill; and the instant the pain ceases he is as well as he could wish."

† Nosological Practice of Physic, p. 300.

lents useless, or take opium ; for where is the man, who, racked with pain in his stomach night and day, can perform his duties in society and enjoy life as it ought to be enjoyed." Unquestionably the effects of large doses of opium in this distressing malady are delightful for a time; but I am by no means disposed to regard this drug as the only means in our power for procuring relief in cases of this kind. I have myself suffered much from this complaint, and have taken opium in large doses; but I have found another remedy which is less ruinous in its consequences, and far more permanent in its good effects than this narcotic. This remedy is the saturated tincture of *lobelia inflata;* a few table-spoonfuls of which has never failed to give me speedy relief, and to procure me long intervals of exception from the disease. I have also used it in the case of a gentleman in this city with the happiest effect, but further than this my experience with this article does not go. The oxyd of bismuth, the carbonate of ammonia in conjunction with magnesia and mint water, the tincture of henbane, and the sulphate of quinine, with a diet consisting chiefly of animal food, have been recommended in this affection, and in some instances considerable benefit may no doubt be derived from them. I have prescribed the oxyd of zinc in a number of cases and occasionally with advantage. Would not the use of the magnet, in the manner recommended by Laennec for the cure of angina pectoris, be beneficial in this complaint? I have just mentioned *animal food*, as according to the experience of some (Dr. Johnson) most proper in cases of this kind. This may be correct with regard to some instances; but I have found it best to make as great a change of the customary diet of gastrodynic patients as could be done. Thus, if a person has been in the habit of using much animal food, he should be put upon a simple vegetable diet; and where the accustomed diet has been vegetable, which is most commonly the case, it should be changed to one consisting chiefly of animal substances. It has appeared to me that this affection is often connected or dependent on an ineffectual hæmorrhoidal effort; and advantage might perhaps be obtained from leeches applied to the anus, and the internal use of small doses of aloes. I have been led to this conjecture by the case of a lady in this city who for six years suffered from frequent extremely severe attacks of gastralgia, radiating along the muscles of the chest into the left mamma. About a year ago, several large hæmorrhoidal tumours appeared at the extremity of the rectum, and in a short time began to bleed freely. The discharge has recurred every three or four months, and she has not had an attack of the gastralgia since the hæmorrhage first appeared.

CHAPTER XX.

INDIGESTION.

INDIGESTION occurs so frequently, and is attended with so discomforting a train of symptoms, that it has the strongest claims upon the attention and sympathy of the physician. The habitual dyspeptic is indeed truly miserable. His sallow and anxious countenance, his irritable and sullen taciturnity, his aversion to social enjoyments, and the occasional overwhelming despondency of his mind, show him to be the prey of deep and harassing sufferings, of which none but those who have experienced them can form an adequate idea. Common, however, as indigestion is, and serious as are its consequences upon the health and happiness of man, there is perhaps hardly any other malady which is so commonly misunderstood, and consequently mismanaged.

In order to obtain a correct view of the pathology of indigestion, and of the true indications for its remediate management, it is necessary to be acquainted with the physiology of the process of digestion. I can here, however, advert only to the prominent and essential circumstances that may be considered as ascertained in relation to this subject. It appears then to be satisfactorily demonstrated, that the two following conditions are essential to the regular and healthy performance of the function of digestion.

1. A due tone and peristaltic action of the muscular coat of the stomach in order that the food may be uniformly embraced by the parietes of this organ, and as it successively undergoes chymification where it is in contact with the stomach, be pushed forwards towards the pylorus and into the duodenum.

2. The regular secretion of a sufficient quantity of healthy gastric juice. That the fluid called gastric juice is really the solvent which converts the aliment into that pultaceous mass called chyme, and that, therefore, digestion, so far as chymification is concerned, is chiefly affected by the agency of this fluid, is, I think, established beyond all dispute. The experiments of Spallanzani, of Stevens, of Gosse, and those quite recently performed by Tiedemann and Gmelin of Hiedelberg, and by Leuret and Lassaigne of Paris, have placed this physiological fact upon the incontrovertible basis of demonstration.

It does not appear from some late experiments that the bile has any material agency in the process of chymification. According to the experiments performed in relation to this point by Mayo, Brodie, Leuret, Lassaigne, Tiedemann, and Gmelin,

chymification goes on perfectly in animals after the biliary duct has been tied. The principal agency of the bile in digestion is to render the fatty substances of the chyme soluble in the chyle. It is the fat or oil thus suspended, by means of the alkaline properties of the bile, that gives to the chyle its milky colour. When the common duct is tied, chymification goes on regularly, but the chyle in the lacteals and thoracic duct is transparent and of a yellowish hue.

Causes of indigestion.—It has just been said that the immediate cause of indigestion consists in a vitiated or deficient secretion of the gastric juice, and in deficient or irregular action of the muscular coat of the stomach. Now as both muscular motion and secretion are under the immediate influence of the nervous power, it is obvious that whatever causes an irritation or morbid excitement in the nervous structure of this organ, must necessarily derange also the healthy performance of these two functions. Accordingly every thing which is capable of causing indigestion, does so either by interrupting the regular supply of nervous influence to the stomach, or by irritating the nervous extremities of the mucous membrane of this organ; or by producing both these effects simultaneously.

Of the former kind of causes, namely, those that interfere with the regular transmission of nervous influence to the stomach, are the *mental emotions*. It is surprising how suddenly any temporary mental agitation depresses, nay, often wholly suspends for a time the keenest appetite and powers of digestion. These temporary depressions of appetite and powers of digestion from sudden emotions of the mind, are converted into protracted and exceedingly unmanageable cases of dyspepsia when the mental perturbations are of a chronic and depressing character. Protracted grief and despondency seldom fail to weaken the digestive powers, and to bring on ultimately confirmed and unyielding indigestion.

Protracted and intense applications of the mind, especially when attended with a sedentary mode of life, is another of those causes which act through the medium of the general system. Such indeed are the sympathetic relations of the stomach with the whole and every part of the organization, that its functions become disturbed by whatever causes either general debility or organic disorder of any of the principal organs of the body.

But by far the most common and powerful causes of indigestion are those that act directly upon the nervous extremities of the mucous membrane of the stomach. Whatever is calculated to cause permanent irritation in this membrane has a direct tendency to produce this disease. I think it may be assumed as a pathological axiom, that the function of secretion can never be deranged without the existence of *irritation* in the secreting organ. Irritation of the vascular extremities that secrete the

gastric fluid, exists therefore in every case of indigestion. The causes which most frequently give rise to this irritation, consist of over-distention of the stomach and indigestible and irritating articles of food. The manner in which food of this kind produces the irritation in question, is easily to be understood. When the food resists the digestive powers too long, besides its direct irritating impressions upon the stomach, it enters more or less into the fermentative process, and evolves new combinations, such as gas, acidity, &c. which enhance the irritating qualities of the contents of the stomach. Besides these consequences of too long a retention of imperfectly digested food in the stomach, the muscular powers of this organ will be diminished by the long and continued exercise to which it is subjected, as well as by the over-distention and irritation caused by the extrication of gas. Portions, too, of the half-digested food will pass into the duodenum, which, being altogether uncongenial to the sensibility of this organ, will give rise in it to irritation, spasm, and pain, and by sympathy, functional derangement of the liver. When this state of things is once produced by some error in diet, assisted perhaps by general causes, the slightest causes—even the ordinary digestible and plain diet taken in health, will not only sustain it, but often increase its violence, if favoured by other circumstances of a debilitating character.

Dr. Philip thinks that *over-distention* of the stomach, by eating too much, is one of the most common causes of dyspepsia, and there can be no doubt as to its decided tendency in this way. It is probable, however, I think, that it is not so much by an over-distention of the muscular coat of the stomach which a superabundance of ingesta produces, that indigestion is caused, as by the mere excess of food beyond what the stomach is capable of digesting. Suppose the utmost powers of the stomach to be capable of digesting sixteen ounces of food at a time; it is manifest, that if twenty ounces are taken, some of it will remain either in a partially digested, or wholly undigested state in the stomach, a longer time than is compatible with the healthy condition of the organ. This portion will therefore irritate the gastric nerves,—enter more or less into a state of chemical decomposition, and give rise to deficient or vitiated secretions in the stomach, as well as debility of its muscular tunic. The effects which follow the reception into the stomach of an undue proportion of food, besides those of mere over-distention, do not differ from those which are caused by indigestible articles of diet. A small portion of food which resists the digestive powers, is capable of bringing on violent dyspepsia, by remaining in the stomach beyond the period which is allotted by nature to the process of digestion, and becoming thereby a source of irritation in the manner

already mentioned. Just so does it happen when the portion of food, however digestible, is greater than the stomach is capable of digesting at a time: for the portion which remains in an undigested state, and which the stomach is no longer able to convert into chyme, will act like so much indigestible food, and give rise to the distressing consequences which often result from such articles of diet.

The causes which most commonly occasion the reception of more aliment into the stomach than its powers are capable of converting into chyme, are:

1. *Eating too fast.*—Dr. Philip has satisfactorily explained the way in which rapid eating tends to cause persons to take more food than they are able easily to digest. "The appetite subsides only in proportion as the gastric juice becomes mixed, and as it were neutralized by the food. When we eat rapidly, time is not given to the gastric liquor to combine with that part of the food which is presented to it; the sensation of hunger therefore continues, and we continue to eat until so much food is taken that the whole gastric fluid which the stomach is capable of supplying during the digestive process is not sufficient to effect the due chymification of it. Whereas, when we eat slowly, so that a proper time is given for the combination to take place, the appetite abates before the stomach is overcharged. Every one has occasionally observed, that if his meal is interrupted for ten or fifteen minutes after having eaten perhaps not one third of the usual quantity, he finds that he is satisfied. The gastric fluid which had accumulated has had time to combine with, and be neutralized by the food he had taken. It is for the same reason that a few mouthfuls of food taken a little before dinner will often wholly destroy the appetite, especially in delicate people in whom the gastric fluid is secreted in small quantity, or of a less active quality."

2. *Imperfect mastication* acts in the same manner, and as it is always connected with rapid eating, contributes greatly to this latter cause.

3. *The use of condiments*, stimulating drinks, and high-seasoned food. These excite an artificial appetite, and keep up the desire for food longer than it would be sustained by the impressions simply of the gastric fluid.

The free use of very cold or warm drinks, particularly during meals, tends much to weaken the digestion, and to aid other causes in the production of dyspepsia. By drinking freely, the gastric fluid is so much diluted that its powers are weakened, and of course the process of digestion more or less retarded. *A very mixed diet*—especially if the articles are of unequal degrees of digestibility—is a frequent cause of indigestion.

I have stated above, that a tardy peristaltic action of the

muscular coat of the stomach, by which the digested portions of food are too long retained in this organ, is very often concerned in the production of dyspeptic symptoms. I am persuaded, however, that the reverse condition also very frequently obtains, in cases of painful and imperfect digestion—namely, that the food is too rapidly hurried through the stomach into the duodenum, before it has had time to undergo the full action of the gastric fluid. This appears most commonly to be the case in confirmed instances of the disease—or in such as are attended with a high degree of irritation, or a subinflammatory condition of the mucous membrane of the primæ viæ.

That a morbid peristaltic activity of the stomach often exists in dyspepsia, may be inferred from the consequences which are known to result from high irritation or phlogosis of the mucous membrane of the intestinal tube. The phenomena of indigestion in aggravated cases, also confirm the correctness of this opinion. It is a common circumstance, for instance, to hear dyspeptics complain of a sense of fulness in the stomach after eating even a small portion of food. But notwithstanding this feeling of repletion, they soon complain again of the customary sense of emptiness in the region of the stomach, and crave for more food. It is to be observed, likewise, that the chief distress or uneasiness in such cases, is not experienced in the stomach, but rather in the region of the duodenum. Many dyspeptics feel no particular uneasiness until an hour or two after eating, when they begin to experience pain and distention in the duodenum. In some cases the food is speedily hurried off by the bowels in an imperfectly digested condition, under very severe sufferings from tormina and flatulent distention of the intestines.

Symptoms and course.—The symptoms of indigestion differ considerably according to the stage of the complaint, or the degree and extent of the irritation. In the commencement the appetite is variable, generally weak, and often entirely destroyed; the patient is troubled with flatulency, distention, acid eructations, and colic pains; the mind is, at times, depressed and languid; the tongue covered with a white fur; the bowels usually constipated; the whole system languid, particularly during the process of digestion; and there is almost a constant uneasy feeling in the epigastrium. Sometimes the appetite is morbidly craving, but if the patient indulges freely in taking food, he becomes much oppressed, and generally suffers severe pains some hours after eating. After the disease has continued for some time, or it is aggravated by some unusual irritating cause applied to the stomach, the pulse becomes tense and quick; the epigastrium tender to the touch; the mind irritable, discontented, and gloomy. The colic pains are more frequent and severe some time after taking food; the bowels

irregular, being sometimes constipated ; at others affected with diarrhœa, during which portions of food are occasionally passed off in an imperfectly digested state—the stools varying in colour, consistence, and character. The body now begins to waste, the strength fails, the epigastric distress severe and constant, the countenance assumes a haggard and sallow aspect, the patient complains of more or less difficulty of lying on the left side, the skin becomes dry and shrivelled, and there is usually a morbid sensibility to low temperature.

From the extensive sympathies which subsist between the stomach and every other part of the living body, dyspeptics are frequently much harassed by painful and other distressing affections in parts situated remotely from the stomach. Among these sympathetic affections of indigestion, *headach* is the most common and annoying. Dr. Warner observes, that there are two sorts of dyspeptic headach, the one occurring while the process of chymification is going on slowly and imperfectly in the stomach, and the other after the chyme has left the stomach and passed into the duodenum. The former is distinguished by a languid and feeble pulse, a slightly coated and whitish tongue, with very pale red edges, mistiness before the eyes, slight vertigo, and an apprehension of falling ; slight nausea and uneasiness in the stomach ; a sense of constriction about the fauces ; and sometimes a coldness and numbness of the fingers ; and generally a feeling of weight in the brain. The second, or as Dr. Paris calls it, *duodenal* dyspeptic headach, is characterized by *brilliant occular spectra* which constantly distress the patient ; the chilliness of the body, and coldness and dampness of the hands and feet. The pain in the head is very severe, attended with a sensation of coldness and tension of the scalp, and a sense of weight and distention in the eyeballs. The tongue is commonly covered with a yellowish white fur and is often much coated. The pulse is natural in frequency, but it is always languid. There is usually flatulency, and Dr. Paris states that a peculiar feeling of dryness and inactivity of the bowels, as if the intestines had lost their sensibility and were unable to propel their contents, giving rise to a peculiar sensation of weight and obstruction, may be regarded as pathognomonic of this variety of the affection. These headachs rarely continue longer than two or three hours, and are usually diffused throughout the whole head.

In a practical point of view, it is of great importance to bear in mind that dyspepsia may depend on two distinct morbid conditions of the digestive organs : namely, 1. On functional debility of the stomach from deficient or vitiated secretion of the gastric fluid, and muscular inactivity, independent of vascular irritation or inflammation. 2. On deficient or vitiated secretion of the gastric fluid, *with* vascular *irritation* or *chronic*

inflammation of the mucous membrane of the stomach and duodenum, and a morbidly increased peristaltic action of these organs.

The characteristic symptoms of the former grade of indigestion, are weak appetite; tongue covered with white fur; *absence of epigastric tenderness*, except after a paroxysm of colic from flatulent distention; *costiveness;* acid and fœtid eructations; absense of *habitual tension and febrile irritation of the pulse;* and the ability of bearing lean and tender animal food better than vegetable and farinaceous articles of diet.

The phenomena which characterize the second or inflammatory grade of the disease, are tenderness to pressure of the epigastrium, and particularly about the region of the pylorus and duodenum; a red, chopped, granulated or glossy appearance of the tongue; a firm, tense, small, and somewhat accelerated pulse, with slight manifestations of febrile exacerbations towards evening; emaciations; irregular action of the bowels, with frequent attacks of mucous, bilious or watery diarrhœa; violent and protracted pain in the lower part of the epigastrium during the process of digestion; fulness about the edge of the false ribs on the right side; an anxious and discontented expression of the countenance; and an inability, without great suffering, to endure animal food and stimulants. It appears, that the irritation or chronic inflammation of such cases is seated in the mucous membrane of the *pyloric extremity* of the stomach and of the *duodenum*, connected usually with a congested state of the liver, and often with fæcal accumulations in the colon. Hence the region of the duodenum and pylorus is almost invariably somewhat distended, and very tender to pressure in such cases; and these circumstances, together with the tense and quick pulse, furnishes the most certain diagnosis of the existence of high mucous irritation or chronic inflammation in dyspeptic complaints.

In some instances, the pain and tenderness extends across the epigastrium into the left side, and becomes fixed in the region of the spleen, or where the colon turns down to form the descending arch. This pain and tenderness in the left side appear to depend on various causes, "all of which," says Dr. Philip, "are more unfavourable than the circumstances which cause its existence in the region of the pylorus and duodenum."* It may depend on an inflamed and engorged condition of the spleen, in which case this viscus is generally found in an enlarged condition. It arises also sometimes from enlargement of the left lobe of the liver, "which is always the part of this organ most affected in indigestion." According

* On the Treatment of the more Protracted Cases of Indigestion. Lond. 1827, p. 19.

to the observations of Dr. Philip, however, the most common cause of the pain and tenderness in the left side, is the extension of the chronic inflammation from the pylorus to the other parts of the stomach.

There is generally much difficulty in distinguishing pain and tenderness seated in that part of the colon which lies over the pylorus, from the same affections in this portion of the stomach and duodenum. "The best means for distinguishing affections of the stomach from those of the colon, are the digestive process in the latter case being better performed; the state of the bile being less disorded; the patient not experiencing the increase of uneasiness which often comes on after meals, for a considerable time after eating, and often experiencing more or less pain, or some other uneasiness in the region of the stomach a short time before the bowels are moved, and more or less relief soon after their action." (Philip.) Pain and tenderness on pressure, cannot, however, be regarded as an unequivocal sign of inflammation in the pylorus and duodenum. This part sometimes becomes morbidly sensitive from mere irritation, without capillary congestion or inflammation. Nevertheless, where we find this tenderness a little below and to the right of the pit of the stomach, at the same time that the sides and tip of the tongue are very red, with a granulated surface and a dry streak in the middle, together with a tense and quick pulse, we may be assured that the parts just mentioned, are in a state of inflammation.

Treatment.—One of the first things to be attended to when we are called to prescribe in a case of dyspepsia, is to obviate, as far as possible, the usual exciting causes of this distressing affection; and with this view, we must direct our attention chiefly to the adoption of proper *dietetic regulations*. In all cases of dyspepsia, whether simple or complicated, mild or violent, an undeviating observance of suitable regulations in relation both to the quantity and quality of the aliment, and the manner of taking it, is absolutely indispensable to success in the management of the disease. The patient should be directed to masticate well and slowly, to take his meals at regular hours, to eat no more at a time than is just sufficient to sustain the powers of the system, and to drink but little during and for a short time after taking food; and he must avoid taking any active exercise during the first stage of the process of digestion. The presence or absence of the symptoms indicative of high irritation or subinflammation in the mucous membrane of the stomach and duodenum, will enable us to say, almost with certainty, whether an *animal* or vegetable diet will procure most relief to the patient; but in relation to the particular articles of these two kinds of aliment, no specific directions can be given that are applicable to all cases: for

some dyspeptics are benefited by certain articles of food that are altogether intolerable with others. This is more especially apt to be the case in those habitual dyspeptic cases which depend on mere functional debility, with morbid sensibility of the stomach, unconnected with inflammation. In some cases the dyspeptic symptoms are excited only by particular aliments; "and we must endeavour to ascertain whether a peculiar idiosyncracy of the stomach prevails in such instances; or whether there is a debilitated condition of the organ that incapacitates it from digesting any food demanding considerable powers for its chymification." Every individual affected, and suffering under this grade of dyspepsia, must in a great measure learn from his own experience, what articles of diet will or will not agree with him. In general, however, where the disease depends on mere debility of the digestive organs, without a fixed tenderness and fulness in the epigastrium, the more digestible kinds of *animal* food, are decidedly the most proper. In such cases, a plain abstemious diet of this kind, together with the occasional use of gentle aperients, mild tonics, regular exercise, and a rigid avoidance of the usual exciting causes of the complaint, will rarely fail to establish a cure, or at least to procure an exemption from its more disturbing symptoms. *Animal* is undoubtedly much more digestible than *vegetable* food; and where the gastric irritation is not considerable, it will very generally be taken with the least inconvenience by dyspeptic persons. We may lay it down, therefore, as a general principle, that animal food is the most proper; and of this the most tender muscular parts are to be selected. There is nothing to be apprehended from the stimulant qualities of animal food, in cases depending on debility, without any particular morbid irritability or phlogosis of the digestive organs. Our object here is to obtain the most digestible food, and which is, at the same time, the least apt to enter into fermentative decomposition. By a food of this kind, the debilitated stomach is moderately excited and subjected to less labour; while the chyme is more speedily and perfectly formed, and the development of acid, flatus, &c. thus in a great degree prevented. It is very different, however, with those cases of protracted and inveterate dyspepsia, that are attended with a red tongue, tender and somewhat tumid epigastrium, and a firm pulse. Here the food, as I shall presently state more particularly, must be as bland and unirritating as possible.

Much attention has been directed to inquiries concerning the comparative digestibility of the various customary articles of food. The flesh of old animals, with the exception of beef and veal, is more digestible than that of young animals. The latter contains much more mucilaginous matter than the former; and all mucilages are of difficult digestion. Animal jellies and

young meats, observes Dr. Philip, are what is commonly called *light* food, with a reference to their stimulating qualities or tendency to excite fever—and hence in persons recovering from fever, or in extremely irritable habits, we prescribe the animal jellies, or *young* meats, which contain them in abundance, in preference to the meats of old animals. In dyspepsia, however, from mere gastric debility, animal jellies remain long in the stomach from their indigestible nature, and cause therefore more disturbance and distress than beef or mutton. Tender beef, mutton, and all kinds of game—more especially venison, are usually of easy digestion, and generally agree much better with dyspeptics during the early stages of the disease, than any other articles of diet. Pork and veal are with most persons affected with indigestion altogether inadmissible ; and fish too, seldom agree well except when taken in very small portions and in a boiled state. The most oppressive kinds of poultry are geese and ducks ; and "turkey is more oppressive than *fowl*, which, next to mutton, is perhaps, upon the whole, the lightest animal food in common use, if *the skin be avoided*." Pheasant is the least easy of digestion of the different kinds of wild game: but *partridge* and *hare* are in general readily digested by weak stomachs. Soft-boiled eggs will sometimes agree very well with dyspeptics; but care must be taken not to eat the coagulated portions of the albumen. Simple *roasting* or *boiling* is the best way of preparing meat for persons labouring under indigestion—*fried* articles of food being in general very oppressive. There is no aliment more offensive to a weak stomach than *new-made bread*. By mastication it is converted into a tenacious paste, which "is not easily pervaded by the gastric juice," and is therefore always very slowly converted into chyme. The bread used by a dyspeptic person should always be several days old: and, for a change, crackers, or "pilot bread" may be used. Some individuals derive much advantage from the employment of *bran-bread*, but I have reason to think that where there exists a morbid sensibility of the stomach, it is generally decidedly injurious. The only benefit that can be obtained from bran-bread, beyond what may be derived from common bread, arises from its gently stimulating the bowels, and keeping up regular alvine evacuations; but I have known it to produce disagreeable irritation both in the stomach and bowels, by the small cuticular scales of the grain which it contains, and which are almost insoluble in the gastric fluid. Cheese, milk, cream, and butter, unless taken in very moderate portions, are apt to become oppressive. I have known dyspeptic individuals, however, who were much benefited by the habitual use of cream and crackers at their meals. Fresh vegetables are very generally injurious, particularly cabbage, peas, beans, and above all cucumbers, lettuce, celery, and

other articles of this kind taken in the form of a salad, or in an uncooked state. Of fruits, pears, currants, gooseberries, whortleberries, and melons, are generally most apt to prove injurious. Mealy potatoes and turnips are among the best articles of this kind for dyspeptic subjects. All kinds of pastry—such as hot cakes, pies, puddings, &c. are entirely out of the question. The food of a person labouring under dyspepsia from gastric debility should be chiefly taken in a solid state. Soups and broths very rarely do well in cases of this kind. I have already stated that slow eating and perfect mastication are all-important observances in dyspepsia, and that but very little drink should be taken during or soon after meals. Moderate portions of brandy and water usually answer well in slight cases of indigestion, but in the more aggravated forms of the disease they are exceedingly improper. Simplicity in diet, too, is of great importance to the comfort of dyspeptics; and what is of equal, if not still greater importance, is, to take but moderate portions of food into the stomach at each meal.

It must not be forgotten, that the foregoing dietetic observations apply only to those cases of indigestion which are free from a morbidly sensitive and irritable, or an inflamed condition of the digestive organs. The signs by which these conditions may be detected have already been mentioned; and it of the utmost importance to form a correct diagnosis on this subject. So far from solid animal food being the best aliment in cases of this kind, nothing but the lightest farinaceous articles of diet can be borne with any degree of comfort, or are compatible with the restoration of the healthy state of the stomach.

These cases must indeed be treated in every respect as instances of *chronic* gastro-enteritis, and the observations that I have made with regard to the diet in these affections, are therefore fully applicable to *inveterate* cases of dyspepsia.

Medicinal treatment.—When the disease depends on functional derangement from mere debility or inactivity of the digestive organs, the bowels are generally torpid and loaded with feculent matter; and hence an important indication in cases of this kind is to procure regular alvine evacuations by diet if possible; if not, by the occasional use of gentle aperients. When first consulted in dyspepsia of this grade of gastric disorder, it will in general be necessary to prescribe a laxative sufficiently active to evacuate the bowels freely; but when the infarcted state of the alimentary canal has once been removed, the gentlest articles of this kind, and in doses barely sufficient to procure one or two consistent evacuations, should alone be employed. If, indeed, the action of the bowels can be regularly maintained by dietetic regulations, it ought always to be preferred to the exhibition of laxatives. This, however, can

rarely be adequately done, and almost all dyspeptics find it necessary to resort more or less frequently to remedial means for procuring regular alvine evacuations. Rhubarb in union with some aromatic or stimulating substance, will in general answer well as an aperient in such cases. The following pill* may be taken a short time before the principal meal; and where there is much acidity in the stomach, the rhubarb may be advantageously given in combination with from ten to twenty grains of the carbonate of soda, or with thirty or forty grains of magnesia. No remedy, however, has appeared to me to act more favourably as an aperient in the milder grades of habitual dyspepsia, than small doses of ipecacuanha in union with aloes and the extract of hyoscyamus. From personal experience, I know that in some instances at least, the effects of this combination are peculiarly soothing and sufficiently aperient.†

Emetics were formerly much employed in dyspepsia; but except in recent attacks from a surfeit or very irritating and indigestible ingesta, their use is now very properly almost universally condemned. Where it may be deemed advisable to excite vomiting, we may generally effect this purpose by copious draughts of lukewarm water, or what is still better, a strong infusion of chamomile flowers, or of the eupatorium perfoliatum. When these do not procure adequate emesis, an ordinary dose of ipecacuanha may be administered. *Tartar emetic* is decidedly objectionable, even under the strongest indications for the employment of an emetic in dyspepsia. Where the disease is connected with morbid sensibility of the stomach, or with chronic inflammation, no circumstances, perhaps, can justify the exhibition of an emetic.

In the grade of indigestion now particularly under consideration, besides the dietetic measures already indicated, and an attention to the regular maintenance of the alvine evacuations, *mild tonics* in combination with *alkalies*, gentle exercise, and the avoidance of the usual exciting causes of the disease will generally restore the healthy functions of the digestive organs. A weak infusion of *colomba*, or of *gentian*, with a portion of the carbonate of soda, or of potash, may be employed for this purpose. The ferruginous preparations also are often peculiarly beneficial in cases of debilitated digestive powers, without any prominent hepatic derangement. The tartrate of iron given in union with a small portion of ipecacuanha, has

* R. Pulv. rhæi gr. ii.
—— aloes gr. ss.
—— capsici gr. i.—M. To be made into a pill.

† R. G. aloes soccot. ℈i.
P. ipecac. ʒss.
Extract. hyoscyamus ℈i.—M. Divide into 20 pills. Take one at night on going to bed.

done much good in my hands in no inconsiderable number of cases.* The chalybeate mineral waters also, will occasionally procure more benefit in instances of this kind than any other tonic. The white mustard seed has of late years been a very fashionable remedy for dyspepsia, and in cases of simple languor and weakness of the stomach very considerable advantage may in general be derived from them. Four or five tea-spoonfuls of the unbruised seed should be taken during the course of the day. I have known several individuals habitually subject to slow and painful digestion with torpor of the bowels, much benefited by this remedy. It need scarcely be observed, that where the stomach is morbidly irritable and tender to pressure, this article cannot be taken without injurious consequences. Tonics, however, are very frequently much abused in this affection, and may readily do much mischief where there is great irritability of the stomach or a state of phlogosis, and especially where the hepatic functions are prominently deranged. They can be employed with a prospect of advantage only in cases of torpor or weakness of the digestive organs. Indigestion seldom continues long, even in its milder grades, without involving the liver in functional disorder; and hence, alterative doses of *mercury* have of late years been among the most common means in dyspeptic affections. Where from the icterode state of the eyes and skin, and the appearances of the stools and urine, there is reason to suspect the existence of functional disorder of the liver, the use of alterative portions of the blue mass is decidedly indicated, and will generally afford unequivocal benefit. From four to six grains of the blue pill may be taken every second or third night, with an occasional dose of some gentle laxative—such as small portions of rhubarb, or one or two Seidlitz powders, or a few of the laxative pills already mentioned. I have been much in the habit of giving the blue mass in union with a laxative, according to the following formula; and generally, as it appeared to me, with more advantage than when they are given separately and at distinct periods.† Care must be taken, however, in prescribing mercury in this affection, not to continue its use until the general system becomes affected; for general mercurial excitement is always improper in dyspepsia. Some individuals are always very disagreeably affected by the blue pill. I have met with dyspeptic patients in whom this mercurial invariably excited the most unpleasant sensations in the stomach, as well

* R. Tart. ferri ℥i.
Pulv. ipecac. gr. v.—M. Divide into 3 equal parts. Take one every morning, noon, and evening.

† R. Massæ hydrar. ʒi.
G. aloes soccot. ℈iss.
Tart. antimonii gr. ii.—M. Divide into 20 pills. Take one every other night, on going to bed.

as great general restlessness and nervous irritation. When this is the case, we may generally gain our object by the internal use of the nitric acid diluted in a large portion of water; or what has appeared to me still more advantageous, the nitro-muriatic acid bath in the way mentioned under the head of chronic hepatitis.

As palliatives, *alkalies* and *opium* are the best remedies we possess—the former for removing the burning and aching sensations which are caused by acidity in the stomach, and the latter for allaying the colic pains that result from the irritation of the food, flatus, and acid in the stomach and duodenum. It is to be observed, however, that opium cannot be frequently employed in this affection without still farther impairing the digestive powers of the stomach; but the pains are often so extremely violent, that we are obliged to resort to this narcotic for relief. In those cases of dyspepsia which are connected with a high degree of morbid sensibility of the mucous membrane of the stomach and duodenum, the occasional use of this anodyne is peculiarly valuable. Without it, indeed, patients labouring under this variety of dyspepsia would enjoy but few moments of exemption from suffering. Dr. Philip recommends Dovers' powder, and advises that from two to four grains of it should be given every six or eight hours. This will commonly be sufficient to allay the general nervous irritation which is apt to occur in cases of this kind; but when those violent gastric and duodenal pains come on which at times rack the unfortunate dyspeptic, nothing but the largest doses of laudanum will be sufficient to allay his extreme suffering. I have known persons in the utmost degree of agony for hours from irritation in the stomach and duodenum, who were obliged to take several hundred drops of laudanum before relief was procured; and in this respect, I may, indeed, truly say with the poet—

Atque utinam numero ne nos essemus in isto.

Weak and slow digestion is frequently connected with a morbid sensibility of the nerves of the stomach and duodenum, independent of chronic inflammation of these organs. When the patient is subject to severe pains an hour or two after taking a meal—and more especially when the gastric distress is particularly excited by *certain* articles of food, which usually agree with other dyspeptics; and when, moreover, the edges of the tongue remain of a pale red, with a thin white fur over the middle, and the pulse is free from tension, though quick and small, and the skin generally soft, and below the natural temperature, and, finally, when with these symptoms there is a disagreeable or painful feeling of emptiness experienced in the region of the stomach four or five hours after taking food, without any particular tenderness to pressure on the epigas-

trium—when these symptoms exist, there is reason for believing that an exalted sensibility of the gastric nerves is present without phlogosis. The diagnosis in relation to these circumstances, is of much more importance in a practical point of view, than seems to be generally supposed. Dr. Philip speaks particularly in favour of the employment of *ammonia*, in what he calls the second stage of indigestion, and it is, indeed, in many cases, deserving of all the encomiums which he has bestowed upon it. The instances, however, in which, according to my own observations, it is most apt to prove beneficial, are those in which there is a constant tendency to the generation of acid in the primæ viæ in connexion with morbid sensibility of the mucous membrane of the stomach and duodenum. In cases of this kind, eight or ten grains of the carbonate of ammonia with five or six grains of Dovers' powder may be taken several times during the day with much temporary benefit. Dr. Philip observes, that in cases of dyspepsia, where the surface is cold, the pulse feeble, with a feeling of general depression, and chilliness, "the ammonia is invaluable; being less apt, than any other stimulus of the same power, with respect to the nerves, to excite the heart and blood-vessels; which, from the tendency of the disease, (in this the second stage) are inclined to a degree of excitement beyond that undue proportion to the state of the other powers." Much relief may also be obtained, in cases where the disorder is attended with much irritation and sensibility of the gastric nerves, from the *liq. acetat. ammoniæ*, in union with small doses of laudanum, or of the tincture of hyoscyamus. A table-spoonful of the former, with ten drops of either of these narcotic tinctures, may be taken two or three times daily.

When there is much gastric irritation, with slight febrile symptoms towards evening, such as dryness and heat of the skin, burning in the palms of the hands and soles of the feet, and tension of the pulse, the *nitrate of potash* will generally afford considerable relief. It may be advantageously given with minute portions of the tincture of ipecacuanha, dissolved in some mucilaginous fluid. From five to ten grains of the nitre, dissolved in a few ounces of barley-water, or of a solution of gum arabic, with 50 drops of tinct. ipecac. may be given every 4 hours.

When the gastric irritation has assumed the character of chronic inflammation—that is, when in addition to the general symptoms just mentioned, the epigastrium becomes tender to pressure; the pulse tense and firm, and the edges and tip of the tongue red; tonics, purgatives, animal food, and all stimulating remedies are no longer admissible. Leeching or blistering over the region of the pylorus and duodenum, are here among the most important remedial measures. The latter, indeed, will often be found particularly beneficial in cases at-

tended only with high irritation without actual inflammation. For the removal of that morbidly sensitive condition of the gastric nerves noticed above, there is, perhaps, no remedy so effectual as the application of a blister over the epigastrium. I have known patients who could scarcely take even the blandest articles of food without suffering a great deal of pain, enabled to digest light aliment with tolerable comfort after having the region of the stomach blistered. Pustulation with the tartar emetic ointment, may also be resorted to with a fair prospect of advantage in such cases. Leeching, however, is always an excellent preliminary to vessicating or counterirritating applications. There is but little advantage to be obtained from internal remedies in cases of this kind; yet the nitrate of potash, dissolved in a large portion of some mucilaginous fluid will occasionally assist in removing the dry and constricted state of the skin and the distressing sense of internal heat. Dr. Philip advises the exhibition of small doses of *tartarized antimony*. I have, occasionally, derived some benefit from its administration in cases attended only with gastric irritation; but I doubt much of the propriety of employing this remedy where unequivocal signs of mucous inflammation of the stomach are present. Some writers recommend laxatives in this as in the milder varieties of the disease; but their tendency to irritate the tender and phlogosed mucous membrane of the stomach and intestines, renders them, I think, decidedly objectionable. Slight relief will, it is true, usually follow the operation of a purgative, but this relief is always but temporary, and is very often succeeded by an aggravation of the gastric distress and tenderness. The same objections do not, however, exist against the use of laxative enemata, and I do not, indeed, know any measure which is better calculated to afford ease in cases of this kind, than the daily use of one or two mild laxative clysters. Functional disorder of the liver is a constant attendant in cases of this kind; and it becomes necessary to employ mercurials, either internally, or by frictions on the right hypochondrium. The employment of mercurials, however, requires great caution in the severer cases of the disease; for it is not uncommon to find the blue pill even in small doses to excite considerable intestinal irritation and general uneasiness. To avoid this occurrence, we may give this mercurial in union with a small portion of opium, or of the extract of conium. In general, it will be sufficient to administer one grain of the blue mass, with half a grain of opium, every night on going to bed, and care must be taken not to carry it to the extent of causing even a soreness of the gums. The correction of the biliary secretion, by a gradual introduction of mercury into the system, is genenally attended with the additional advantage of

an abatement in the tension and contraction of the pulse, and a diminution of the temperature and dryness of the skin.

After all, however, our principal reliance in cases attended with a high grade of irritation or chronic inflammation, consists in the use of a bland and unirritating liquid diet, local depletion, revulsive applications, and the occasional use of alterative doses of blue pill or calomel, with laxative enemata and gentle exercise by gestation, or where the strength of the system will admit of it, *walking*, regularly, every day, until a slight degree of fatigue is induced.

Let it be constantly borne in mind, that functional derangement of the stomach may be the consequence of mere debility and relaxation—or of high irritation and morbid sensibility—or finally of a chronically inflamed condition of the mucous membrane of the digestive organs; and that, therefore, the mode of treatment, both medicinal and dietetic, which is proper in the first, will not answer in the second, and will prove decidedly pernicious in the third of these varieties. In the first, our object is to increase the tone and activity of the stomach; in the second, to soothe the irritation and morbid activity of this organ; and in the third, to subdue inflammation and obviate its consequence, structural disorder.

CHAPTER XXI.

JAUNDICE.

Icterus, aurigo, morbus regius, morbus arcuatus.

Jaundice consists in a disordered state of the liver or of the biliary passages, characterized by yellowness of the eyes and skin; clay-coloured fæces; a highly bilious urine; and generally by a languid state of the circulation.

In many instances the disease approaches very slowly and insidiously. It commences with a general feeling of languor, disinclination to bodily and mental exertion, an irritable and dejected temper, weakness of appetite, constipation, acid eructations, slow and painful digestion, slight flatulent pains in the bowels, a feeling of fulness and slight tension in the epigastrium, anxiety in the præcordia, restlessness at night, a turbid urine usually depositing a copious pitchy sediment, slow and languid pulse, more or less nausea, and frequently transient creeping chills alternating with flushes of heat. After these symptoms have continued for a few days, a disagreeable

itching over the whole body occurs; the taste becomes bitter; the stools whitish or clay-coloured; the urine of a deep saffron hue; and finally the white of the eyes, and the skin about the lips, neck, and forehead, assume a yellow colour, which speedily extends itself until the whole surface acquires a uniform yellow hue. When the disease has arrived at this stage of full development, the general debility and sluggishness, as well as the uneasiness and tension in the epigastrium increase, and although the pulse is generally slow, full, and somewhat firm, slight febrile exacerbations almost always take place in the evening, with some augmentation of the temperature of the skin and occasional transient sensations of chilliness, with much restlessness during the night. The skin is generally dry and husky. If the disease continues a long time, the body begins to emaciate; the evening febrile exacerbations become more conspicuous, and night sweats ensue; and in many instances, dropsical effusions at last take place into the cavity of the abdomen; respiration becomes anxious and oppressed, and where it verges to a fatal termination, a soporose and torpid condition comes on towards the fatal conclusion of the malady.

In some instances, however, the disease comes on so insensibly that no particular local or general manifestations of its approach are noticed until the eyes and skin begin to assume a yellow hue. When the disease makes its appearance in these two ways, it depends probably on a morbid viscidity of the bile, in consequence of which, its passage from the liver into the intestines is impeded or entirely prevented.

Sometimes, instead of the gradual manner just mentioned, the disease commences at once with severe dull pain a little below and to the right of the pit of the stomach, increasing rapidly in violence, with excruciating exacerbations, spreading towards the left shoulder, down to the loins, and throughout the whole epigastric region; at the same time, the patient experiences almost incessant and extremely distressing nausea, attended with so great a degree of gastric irritability that every thing swallowed is immediately thrown up again with the most violent and painful vomitive efforts. In such cases, the epigastrium is distended and generally exceedingly tender to the touch; but the pulse usually differs but little from its natural condition. When the disease comes on in this manner, it generally depends on obstruction of the common duct by a biliary concretion.

The intensity and brightness of the icteric colour differ very considerably in different cases. In some instances, it is of a golden yellow, in others of a greenish yellow, and in others again it acquires a dark and almost black shade.* The latter

* Cases of this kind are usually called black jaundice, (*melasicterus.*)

two varieties are generally connected with organic disease of the liver, such as enlargement, induration, and tubercles. In protracted cases of jaundice, the yellow colour is not confined to the skin, but pervades almost every part of the body. The adipose structure, particularly, becomes of a bright saffron colour; and the internal membranous tissues are usually conspicuously marked with the same tinge. It is, however, extremely uncommon to find the brain and nerves pervaded with this colour, and its appearance in the cartilages and bones is an almost equally rare occurrence. The fluids, too, become tinged with yellow. Mursinna gives an account of a fatal case of jaundice, in which he found the viscera of the breast and abdomen, as well as the meninges of the brain of a deep yellow colour, and the serum which he found in the pericardium, and ventricles of the brain was of the same colour *and of a bitter taste.**

It is from the tinge being communicated to the humours of the eyes, that to some jaundiced patients all objects appear of a yellow hue. Of the secretions, the *urine* is most conspicuously charged with the bilious colouring matter. It is so abundant in this fluid, that pieces of linen or paper dipped into it immediately acquire a yellow stain. In the *milk* of women affected with this disease, the colour and the taste of bile is hardly ever detected. Heberden, indeed, asserts that the presence of bile in this secretion has never been noticed; but in relation to the *taste*, I have myself observed an instance in which the milk was very perceptibly bitter. Dr. Good thinks that the cause of the very rare occurrence of yellowness in the milk of jaundiced females, arises "probably from its rapid passage and elaboration from the fluids introduced into the stomach." I am inclined to think that this circumstance depends on the bile uniting with the oily portions of the lacteous secretion, and becoming thus suspended with it in the form of an emulsion. We know at least that in the duodenum, it is entirely owing to the union of the bile and the fatty portions of the chyme, that the chyle obtains its milky colour;† and it is

* Journal fuer die chirurgie. Bd. ii. s. 322.

† Mr. Brodie, from some experiments he performed, inferred that the principal purpose of the bile is to separate the chyle from the chyme: "for he remarked, that when the choledochus duct was secured by a ligature and food then given, chymification went on in the *stomach* as usual, but no chyle could be found in the intestines or in the lacteals. The lacteals contained a transparent fluid which he supposed to be lymph and the watery part of chyme. Herbert Mayo draws the same results from his experiments. These results are at variance, however, with the experiments of Leuret, Lassaigne, Tiedemann, and Gmelin. The former after tying the duct and clearing out the bowels with castor-oil, fed the animal 12 hours after the operation with bread, milk, and sugar. Eight hours after this meal, the animal was killed. The food was found

not improbable that the union of oily and bilious matter may, in part, destroy or precipitate the bitter principle of the latter. This at all events must be the case in the duodenum; for notwithstanding the union of the chyme and bile, the fluid in the lacteals, resulting from this combination, and the thoracic duct is wholly free from bitterness.

The duration of an attack of jaundice is extremely various, and depends, of course, almost entirely upon the greater or less degree of permanency of the occasional cause. In some cases, the icteric symptoms come on rapidly under symptoms of great violence, and in a short time disappear again. This is most apt to be the case when the disease arises from the passage of a biliary concretion through the common duct, or from spasmodic constriction of this part. Sometimes the disease is marked by manifest remissions, the yellowness of the skin and other symptoms increasing and abating at short but irregular intervals for a long time. Not unfrequently this malady assumes a strictly chronic character without any particular feelings of ill-health except slight dyspectic symptoms, costiveness, and a disposition to indulge in sleep. More commonly, however, protracted instances of the disease ultimately cause great emaciation and dropsical effusions, and often terminate in a state of apoplectic stupor.

Causes.—The etiology of jaundice is, in many respects, still involved in much obscurity. In a general way, it may be said, that all the remote causes of this disease act either by obstruct-

digested, and "the thoracic duct was distended with a yellowish red transparent fluid, *which coagulated on standing exposed to the air, and yielded the usual proportion of fibrin, albumen, and saline matters.*" Brodie, Mayo, Leuret, Lassaigne, Tiedemann, and Gmelin observed that chymification went on as perfectly after the common bile duct was tied as in a sound animal. In the experiments of Tiedemann and Gmelin, the thoracic duct always contained an abundance of fluid which was generally of a yellowish colour, (confirming in this respect the experiments of Leuret and Lassaigne, and partly also those of Brodie and Mayo.) This fluid coagulated like ordinary chyle, the crassamentum acquired the usual red colour; in short, the only difference between it and the chyle seen in a sound animal was, that after tying the common duct it was never white or milky The reason of this difference appears to be that the white colour is owing to fatty matter taken up from the food by means of the bile, which possesses the power of dissolving fat and probably, therefore, aids in effecting its solution in the chyle at the mouths of the lacteals. "Mr. Brodie appears to have been misled by the absence of the white colour which the chyle usually possesses, but which it is well known equally to want in ordinary digestion if the food does not contain fatty matter." Tiedemann and Gmelin confine the agency of the bile in chylification, simply to the accomplishing the solution of the fatty matter. These experimentalists believe that the biliary secretion, besides its agency in chylification, is supplementary to the function of the lungs in freeing the blood of its carbonaceous and other heterogeneous principles.

ing or preventing the flow of bile from the liver into the intestines; or by impeding, deteriorating, or suspending the secretory action of the liver. Of the former kind of causes are, 1. Biliary concretions plugging up the duct. 2. Spasm of the duct, which may be excited by the irritation of acrid bile; duodenal irritation, and perhaps violent mental emotions. 3. Viscid mucus clogging up the orifice of the common duct. 4. Inflammation and thickening of the coats of the duct. 5. Enlargement and induration of a neighbouring part—particularly of the pancreas, and perhaps of the mesenteric glands.* 6. Preternatural viscidity of the bile, by which its flow along the duct is greatly impeded, or altogether prevented; pregnancy and impacted fæces in the colon. When by any of these causes the bile is prevented from flowing into the intestines, and thereby congested in the biliary passages, it is generally believed to gain admission into the current of the circulation either by absorption or regurgitation, and to be afterwards secreted into the subcuticular tissues, giving rise to the yellow tinge of the surface. It is quite certain, indeed, that jaundice will generally supervene speedily when an obstruction of this kind occurs in the common duct, and from the manifest presence of bilious matter in some of the secretions, we can scarcely doubt that in relation to such cases this view of the etiology of the disease is in the main correct. M. M. Tiedemann and Gmelin, in their interesting account of a series of experiments on digestion, state, that on passing a ligature round the common duct of animals, they found that about the third day the eyes became yellow, and the urine strongly imbued with a colouring matter, which, by chemical tests, they ascertained to be bile.† To this doctrine it has been objected that no bile has ever been detected in the blood of patients affected with jaundice, a circumstance which certainly does not countenance the entrance of the bile into the circulation by *regurgitation*. Against the opinion that the biliary secretion is *absorbed* into the circulation, it is alleged that it is not at all probable that a

* An interesting case of jaundice, which terminated fatally, is related in the *Journal de Progres*, and in which the following phenomena were discovered on post-mortem examination. "Two or three inches from the origin of the duodenum there was a tumour with elevated edges, rather larger than a crown piece, the surface of which was uneven, very hard to the touch, of a whitish yellow colour, and very vascular. The different coats of the intestines were involved in the disease, which included, at one of its edges, the openings of the bilary and pancreatic ducts, which were extremely contracted, and almost annihilated. The gall-bladder was extremely distended, and when strongly pressed a few drops of bile issued forth into the duodenum."—Med. Chir. Rev. July, 1828, p. 440.

† Recherches Experimentales Physiologiques et Chimiques sur la Digestion, seconde partie, p. 47.

fluid so irritating as the bile is would be received by the extremities of the absorbent vessels, and there is indeed much plausibility in this observation. Nevertheless, when we find the bile making its appearance in the urine, and often in the other secretions, together with a uniform yellow tinge, not only of the surface of the body, but also on the internal organs, at the same time that the white or clay-coloured fæces show that there is no bilious matter poured into the intestines, and when finally dissection discovers to us a complete obliteration or obstruction of the common duct, we are forced to admit, that in consequence of the engorgement of the excretory ducts of the liver, from the exit of the bile through its natural passages being obstructed, it is in some way or other abundantly secreted by the kidneys, and its colouring matter at least copiously deposited in the subcuticular and various other textures of the body. The admission of the bilious matter into the circulation is most likely by *absorption;* but it is by no means probable that the bile is thus introduced into the blood-vessels in its state of complete combination. The serous and colouring matter alone may, perhaps, be taken up by the absorbents, whilst the most acrid and irritating portions are left in the liver. Both Deyeux* and Clarion† found in the blood of patients labouring under jaundice a considerable portion of a yellow matter which communicated a saffron stain to linen, just as the urine of such patients is known to do.

Among the above mentioned causes of obstruction to the flow of bile into the intestines, the most common undoubtedly are, biliary concretions, spasm of the duct, and preternatural viscidity of the bile. A very viscid state of the bile is probably much more frequently concerned in the production of this disease, than seems to be generally supposed. Dr. Annesley, in his work on the diseases of India, states that he frequently found, upon post-mortem examination, "the gall-bladder loaded with bile of a dark green colour, and so thick and viscid that it could scarcely be forced through the ducts by squeezing the gall-bladder, although a blow-pipe or probe would pass readily along them, showing that the obstruction was then owing to the viscidity alone." When the disease is preceded and accompanied by a constant aching and soreness, with occasional extremely severe paroxysms of pain in the right epigastrium, together with great irritability of the stomach, we may infer that it arises from the passage of a gall-stone through the common duct. The suffering in cases of this kind, after a longer or shorter period, suddenly ceases; and this occur-

* Considerations Chymiques sur le Sang des Icteriques.—Journal de Médecine, Messidor an. xii. p. 288.

† Considerations Chymiques et Medicinales sur le Sang des Icteriques, Presentées et Soutennues à l'école de Med.

rence may be considered as announcing the entrance of the calculus into the duodenum. From some late pathological researches by Andral, it appears that irritation and inflammation of the mucous membrane will sometimes produce jaundice where no obstruction can be detected in the biliary ducts; and it is perhaps, in this way that the jaundiced hue of the skin is produced in yellow and other severe forms of bilious fever. Dr. Marsh also has related some cases which render it probable that inflammation of the mucous membrane of the duodenum is sometimes extended to the lining membrane of the ducts, whereby a contraction of these passages is produced, either by spasmodic constriction or a thickening of their coats.

Dr. Marsh observes, that hysterical women, of a relaxed and gross habit of body, are subject to a form of jaundice, which, though strongly resembling those cases that arise from the impaction of a gall-stone in the common duct, appear, nevertheless, to owe their origin to a less permanent cause. Some mental commotion, and particularly an error in diet, seems, in most instances of this kind, to be the remote cause of the disease. These come on like a violent attack of bilious colic, or with symptoms resembling those which occur from the passage of a biliary concretion through the common duct. "A pain," says Sydenham, "not less severe than that of the iliac passion is felt at the region of the stomach, or somewhat lower, which is succeeded by copious vomitings of matter, sometimes green, sometimes yellow. To these symptoms are added, a depression of mind and despair exceeding that in any other disease. *It is accompanied sometimes with a remarkable jaundice, which spontaneously subsides in a day or two.* The least commotion of mind, whether it be anger or fear, brings back the pain." When the pain subsides, large quantities of flatus pass off, either upward or downward; and the ejections from the stomach, during the continuance of the pain, are usually acid. I have attended an elderly lady in this city, who is precisely of the habit of body just mentioned, in five or six paroxysms of this kind. The disease always commences like a violent attack of bilious colic, attended with vomiting of a green and acrid bilious fluid. It seldom lasts longer than about forty-eight hours, by which time the surface of the body begins to become yellow, and soon acquires a deep jaundiced hue. In nearly all the attacks I have been able to trace its origin to errors of diet or some mental commotion. Dr. Marsh says these cases may, in general, be readily recognized by the copious secretion of limpid urine which occurs in them. This, however, is only correct with regard to the appearance of this secretion in the very commencement, for commonly in the course of thirty-six hours from the beginning the urine becomes bilious, as in other instances of jaundice. Dr. Johnson

thinks that the leading proximate cause, in cases of this kind, is spasmodic constriction of the gall-ducts, or preternatural viscidity of the bile; and there can exist but little doubt of the correctness of this view. Duodenal irritation, from flatus or acrid bile, and imperfectly elaborated chyme, appear to constitute the principal exciting causes of this variety of the disease. Leeches, fomentations, abstinence from food, purgatives, and *full doses of opium*, will always soon relieve the painful symptoms of the complaint.

Jaundice, as has been already intimated, may be produced, also, by causes that act upon the liver through the medium of the general system. Some of these causes appear to produce torpor of this organ and consequent suspension of the biliary secretion; others, perhaps, give rise to the secretion of acrid bile; which, stimulating the ducts, may occasion spasm and retention of the biliary matter in the hepatic ducts; and others, finally, gradually produce more or less disorganization of the liver. Of this variety of causes, are—intemperance in the use of spirituous liquors; irritating substances in the primæ viæ; suppression of acute and chronic cutaneous eruptions; violent mental emotions, particularly grief;* constipation; suppressed perspiration; the slow influence of malaria; wounds of the scalp; metastasis of gout: and perhaps mercury.†

That the cessation or great diminution of the biliary secretion whether from mere functional torpor or structural alteration of the liver is capable of giving rise to jaundice, admits of no reasonable doubt. Cases of fatal jaundice have been reported, in which, upon post-mortem examination, the ducts were found entirely unobstructed, and the small portion of the bile found in the gall-bladder and liver, of a natural consistence.‡ When the elimination of the recrementitious matter which enters into the composition of the bile is not duly effected by the organ destined for this office, the blood will necessarily become surcharged with this matter, and by a natural tendency of the animal economy to cast off what may be injurious to its welfare, the kidneys, as well as the general capillary system, will in a manner perform the office of the liver, and free the blood

* Dr. Marsh gives an account of a case, where a young girl, in the Lock Hospital, who had got cold while under the influence of mercury, was suddenly informed of the death of her uncle, the only one of her relations who had treated her with kindness; she immediately became universally jaundiced.—*Dublin Hosp. Reports*, vol. iii. art. 6

† Dr. Colles communicated an instance to Dr. Marsh, where a young gentleman, after undergoing an alterative course of mercury, suddenly became deeply jaundiced. In a few days afterwards, he died in a state of delirium and convulsions. On dissection, not the slightest change of structure was discovered. The internal as well as external parts were strongly tinged with bile.

‡ Stoll. Ratio. Medend. vol. iii. p. 361—366.

of a portion of its superabundant biliary elements, by depositing them into the subcuticular textures, as well as into other tissues, and particularly also in the urinary secretion.

Prognosis.—The prognosis of jaundice varies of course according to the nature of the occasional cause, and the general constitutional vigour of the system. When the disease does not depend on an organic affection, or obstruction of the common duct by very large biliary concretions, it may, in general, be removed without much difficulty. Cases arising from violent anger, spasm of the duct, mucus clogging the orifice of the duct, and on preternatural viscidity of the bile, are often speedily removed by an appropriate treatment. In many instances that depend on biliary concretions, the obstructing calculus is not so large as to cause it to be very long in passing through the duct into the duodenum; and such cases, though often attended with extreme pain and gastric disturbance, usually disappear in the course of eight or ten days; but where the disposition to the formation of such concretions is strong, which is not uncommonly the case, these paroxysms of suffering and jaundice are apt to recur again and again, at longer or shorter intervals. It is said, that when jaundice occurs in consequence of injuries of the head, it is in general particularly dangerous and difficult to be removed.* The supervention of stupor, coma, or delirium, is always to be regarded as an extremely unfavourable sign. When the icteric tinge acquires a very dark appearance, approaching to a blackish hue, we may infer that the disease will be exceedingly obstinate, or most probably altogether incurable, such cases being almost always dependent on incurable organic affection of the liver, or of the neighbouring organs. If, in cases of this kind, copious hæmorrhages occur from the nose or lungs; or if violent colic pains and profuse colliquative diarrhœa come on, the prognosis may be regarded as extremely unfavourable.† When the perspiration is so copiously charged with the colouring matter of bile as to communicate a yellow tinge to the patient's linen, there is reason to apprehend a total and obstinate obstruction to the passage of the bile into the intestinal canal. (Jahn.) The occurrence of tympanitis, dropsical effusions, slow febrile irritation, emaciation, and great muscular debility, leave us but little hope of an eventual recovery.

Treatment.—From what has already been said concerning the etiology of jaundice, it is manifest that the treatment requires considerable modifications, according to the particular condition of the biliary organs, upon which the symptoms of the disease depend; for it should be recollected, that the phe-

* Jahn. Klenik d. Chronish. Krankheiten, b. ii. p. 395.
† Richter's Specielle Therapie. b. iv. p. 315.

nomena which we denominate jaundice, are mere manifestations of some local or sympathetic disorder of the biliary organs. When the disease commences with violent pain in the epigastrium, with constant nausea and frequent vomiting, we may ascribe it either to a spasmodic affection of the bile ducts and perhaps of the duodenum, from some local or sympathetic irritation; or to the impaction of a biliary concretion in the common duct. In cases of this kind, our principal object in the first place must be, to relieve the extreme sufferings of the patient, and for this purpose, opium, the warm bath, leeching, frictions, and emollient applications to the epigastrium, are almost the only remedies that afford any decided benefit. If the patient be robust and very plethoric, blood should be at once drawn to an extent sufficient to make a decisive impression on the system. I am inclined to think that blood-letting is too much neglected in cases of this character. I have in several instances of jaundice, commencing in the way just mentioned, procured manifest advantage from an efficient abstraction of blood. Blood-letting may prove beneficial in various ways in this affection. By it we lessen the tendency to inflammation in the irritated parts; and it may favour the passage of biliary concretions through the duct, by its general relaxing powers. But it forms also, a very proper preliminary measure to the employment of *opium*, upon the liberal use of which our principal reliance must be placed, for palliating the painful symptoms. During the first stage of cases of this violent character, emetics, and even purgatives, are out of the question,—at least until the gastric irritability has been in a great measure allayed. After having drawn blood, where this evacuation is indicated by the pulse and general habit of the patient, a large dose of opium in union with calomel, should be immediately administered. Small doses of this narcotic will do no good—on the contrary, they often appear rather to add to the general distress of the patient. From four to five grains of opium with ten or fifteen grains of calomel, should be given at once. When administered in such a dose, it rarely fails to allay the pain and gastric distress in a few hours. But in some instances, even this quantity is not adequate to remove the extreme sufferings of the patient; and it becomes necessary to repeat the exhibition of it in smaller doses until the desired effect is produced. It is not simply, however, as an anodyne that this narcotic may be beneficially employed in painful cases of jaundice unconnected with febrile irritation. When the pain and obstruction to the flow of bile into the intestines is the result of spasm of the duct, we can resort to no remedy more directly calculated to remove this condition, than opium given in very efficient doses. At the same time that we have recourse to this powerful narcotic, the bowels should be emptied by purgative

enemata, repeated until a free evacuation is procured. Much benefit may also be obtained in some instances from the warm bath, and where its employment is practicable, it ought to be resorted to in conjunction with the measures just indicated. If by these means we succeed in allaying the violence of the symptoms, we may then have recourse to purgatives and emetics. The latter, in particular, have been very generally recommended in cases where there is reason to apprehend the presence of a biliary concretion in the common duct. The relaxation and concussive agitation which are produced by the operation of an emetic, may contribute materially to expedite the passage of the concretion through the duct, an event which must be deemed essential to the removal of the disease. We are told by Dr. Darwin, that in two instances he saw upwards of thirty gall-stones voided by stool soon after the operation of an emetic. We must not, however, forget that great pain in the epigastrium, with irritability of the stomach, and a universal jaundiced hue of the surface, may arise from high irritation, or inflammation of the mucous membrane of the duodenum, without any obstruction from biliary concretions; and in such cases the exhibition of an emetic could not fail to prove injurious. These cases may be distinguished from calculus irritation of the ducts, by the very manifest presence of fever, or rather the small, quick, tense, and frequent pulse, and the warm and dry skin, which occur in duodenal inflammation; and the slow, full, and rather active state of the pulse, and entire absence of the usual symptoms of fever, in cases depending on obstruction to the course of the bile from biliary calculi. Where there is reason to suspect high duodenal irritation or subacute inflammation, as lying at the foundation of the malady, recourse must be had to leeching, blistering, and fomenting cataplasms to the epigastrium; a bland and liquid diet; laxative enemata; cooling acidulated drinks; small portions of opium and ipecacuanha in combination; and rest. The use of emetics and purgatives are out of the question. Various remedies were formerly recommended with the view of consuming or dissolving the biliary concretions lodged in the liver or its ducts; but the age of confidence in such remedies has passed by, and there is now but little attention paid to articles of this kind, with a view to their resolvent powers, although some of them may do good by their tendency to excite and alter the action of the liver. The alkalies; soap; a solution of the yolks of eggs in vitriolic ether; Durande's mixture, composed of two parts of vitriolic ether and one of spirits of turpentine; the natural mineral waters containing carbonic acid gas in an uncombined state; and mercury, have been most generally employed for this purpose. With regard to the vitriolic ether and spirits of turpentine, Dr. Good very justly observes, that

where there is a tendency to inflammation, they may do harm by their stimulant effects. In one case under my care, this mixture appeared to do much harm, for it manifestly increased the general irritation of the sanguiferous system, and gave rise to much epigastric tenderness. Where spasm of the duct may be presumed to be the primary affection, nauseating doses of antimony; hyoscyamus; assafœtida; infusion of chamomile; active purgatives; emollient cataplasms or fomentations; anodyne frictions, and enemata, are recommended by the older writers, but they are so greatly inferior to opium, the warm bath, and revulsive applications to the epigastrium, that they scarcely deserve any attention as remedies in this affection.

In those cases which come on gradually, with little or no pain in the region of the duodenum and duct, and where, of course, there is little or no probability of the existence of spasm or biliary concretions, the principal indication is to restore the regular functions of the liver and alimentary canal. Unfortunately, we cannot determine with any degree of certainty, whether such instances consist merely of functional torpor of this organ; or of a slow organic change of its structure; or of the gradual formation of an indurated enlargement of the pancreas; or of some other latent affection of the bile ducts or duodenum near the opening of this duct; or finally, of a loaded state of the colon; and our remedial measures must, therefore, often be applied under much uncertainty as to their fitness to the actual condition upon which the general icteric symptoms depend. The mere empyrical prescription of remedies for the remote consequences, or symptoms of the fundamental hepatic disorder—or for *jaundice*, as it is usually said, will not satisfy the scientific physician; and yet, in many cases, the minutest attention to the circumstances and phenomena of the disease will enable us to form only a plausible conjecture as to its true nature. Where there is reason to presume that the primary morbid condition consists in functional inactivity of the liver, mercurials are the principal curative means. As this functional torpor is, however, itself probably only a consequence of an irritation located elsewhere, particularly in the mucous membrane of the alimentary canal, it will always be especially proper to attend to the state of the bowels in all cases that come on slowly, and without any particular pains in the epigastrium. About two years ago I had a striking example, illustrative of the propriety of this latter observation. A young man, who had for several years laboured under weak digestive powers, became gradually deeply jaundiced, with clay-coloured fæces and highly bilious urine. The liver was manifestly in a very inactive condition, and although there was no distinct pain felt in the epigastrium, moderate pressure about the region of the umbilicus gave rise to great soreness and distress. He

had already taken a great deal of medicine, under the direction of another physician; but without the least perceptible advantage. I put him upon the lightest kinds of liquid farinaceous diet, and directed him to have fifty leeches applied to the epigastrium, and to use a laxative enema every morning soon after breakfast, and three grains of blue pill every night on going to bed. In less than a week after this treatment was commenced he began to mend, and in the course of four weeks his health was entirely restored. Jaundice has been known to recur in a strictly periodical character, and cases of this kind are, perhaps, always intimately connected with intestinal irritation. Bang mentions an instance of periodical jaundice which, after many other remedies had been ineffectually used, was speedily cured by the application of a large blister over the right hypochondrium. In cases of this kind, unattended with high irritation of the mucous membrane of the intestinal canal, some advantage may also be derived from the extract or infusion of taraxacum; and some of the German physicians strongly recommend the infusion of *saponaria officinalis*, a common plant in this country. The taraxacum is supposed to possess considerable powers as a deobstruent; but its usefulness in affections of this kind, if it really possesses any, arise no doubt wholly from its mild aperient and diuretic operation. Mercurial frictions on the right hypochondrium are highly proper in such cases; but the best remedy, perhaps, for exciting the action of the liver, and promoting a healthy secretion of bile, is the nitro-muriatic acid bath, employed in the way mentioned under the head of chronic hepatitis, at page 250 of the first volume of this work. Many highly respectable testimonies might be cited of the beneficial effects of this remedy in cases of chronic jaundice. I have myself used it in two instances with marked advantage. Mercury, in alterative doses, and the nitro-muriatic acid bath, appear to be equally well adapted to the treatment of this affection, whether it consist in mere functional torpor of the liver, or in a vitiated biliary secretion; and in general, wherever the disease is gradual in its approach, and unaccompanied with distinct pain, these remedies deserve a full trial.

When the disease continues a long time, and the icteric hue acquires a dark appearance, there will be much reason for suspecting the existence of some organic affection of the liver. Cases of this kind are almost always entirely beyond the control of remedial measures; yet it will be proper, even under the most unfavourable circumstances, to make an effort to remove, or at least to arrest the progress of the hepatic affection. External revulsive applications, low diet, and the use of mercury or the acid bath, just mentioned, are the only means upon which the least reliance can be placed in cases of this

character. Where enlargement and induration of the spleen or pancreas exists the tincture of iodine would probably be of service.

Whatever be the precise nature of the hepatic derangement, a strict attention to proper dietetic regulations is of great consequence. The digestive powers are always weak in cases of jaundice, and an error in diet may not only cause great uneasiness and distress from the ordinary affections of dyspepsia, but what is more to be dreaded, may readily give rise to high irritation in the mucous membrane of the duodenum, as well as of the other portions of the alimentary canal, and thus tend in no trifling degree to increase the hepatic disease, or to inflammations. Where there is tenderness in the epigastrium, and in general, in all recent cases commencing with violent symptoms, the diet should be of the lightest or least irritating kind. In instances that assume a chronic form, the food should be digestible and simple; and where there is reason to suspect the presence of gastro-enteric irritation, it will not even be prudent to allow much solid food, even of the lightest and most digestible kind.

There are few diseases that have given so great a scope for empiricism as the one now under consideration. Articles of the most opposite, and in many instances of a decidedly pernicious character have been extolled as specifics for the cure of this affection. The old and exceedingly absurd doctrine of "signatures," gave rise to the employment of the *celandine*,* and there are not wanting many highly respectable authorities in favour of its use in this malady. The *agrimony*, too, was formerly highly extolled for its efficacy in jaundice;† and of late years the *sanguinaria* has been brought forward as a valuable remedy in this affection. This remedy is much praised by the late Professor Smith of New-Haven. He gave the tincture in doses of from thirty to fifty drops three times daily. *Hemp-seed* boiled in milk, is another remedy which has been said to possess very useful powers for the cure of this affection. Sydenham strongly recommends *rad. rub. tinctor;* and Baldinger relied much upon the use of small doses of ipecacuanha.

* Jahn speaks very favourably of the following combination, where the disease depends on torpor of the liver, and a sluggish condition of the portal circulation.

R. Sulph. aurant. antimon. ℈i.
Gum. ammon.
G. assafœtid.
Fel. tauri āā ʒii.
Extract. chalidonii maj. q. s.—M. Divide the mass into two grain pills. Take from 8 to 12 pills four times daily.

† J. Hill. Method of curing Jaundice and other Diseases of the Liver by the Herb Agrimony. London, 1769.

It is not improbable that these and many other remedies that have been mentioned, may, under peculiar circumstances, be occasionally serviceable; but as we are wholly without any rational indications for their use, their employment is a kind of haphazard practice, which will be more likely to do mischief than good.

CHAPTER XXII.

DIARRHŒA.

Diarrhœa is an affection of the bowels, the characteristic symptoms of which are: frequent and usually copious liquid stools of a feculent character—attended with more or less griping without tenesmus, and generally without febrile irritation.

The proximate cause of diarrhœa consists, according to the sentiments of Cullen and some other writers, in increased peristaltic motion of the intestinal tube. Unquestionably, an inordinate peristaltic action does take place in this affection; but this increased action does not constitute the essential pathological condition of the disease, and cannot therefore be properly regarded as its proximate cause. Increased action of the intestinal canal may arise in two ways, namely: 1. The irritability of the bowels may be in a natural state, whilst the substances which are brought to act on them are of a peculiarly irritating or exciting character. In this case the alvine discharges will generally cease soon after the irritating substances which have excited them are expelled, or their activity is destroyed—as is the case with the purging produced by cathartics, or the action of other transient irritants. 2. The irritability of the bowels may be preternaturally increased; in which case, the ordinary secretions and contents of the intestinal canal, and even the mildest substances will produce excessive peristaltic action, and of course frequent alvine discharges.

Irritation of the mucous membrane of the bowels, therefore, constitutes the primary morbid condition in diarrhœa, of which the increased peristaltic motion and the inordinate alvine evacuations are the consequences. When the diarrhœa continues long, or assumes a chronic form, the mucous irritation becomes fixed, and unless it be counteracted by an appropriate treatment, gradually passes into a state of chronic inflammation—more especially of the mucous membrane of the colon, and finally terminates in ulceration, and other forms of disorganization of this membrane. Broussais observes, that when

diarrhœa continues beyond the thirtieth day, it is almost invariably connected with organic derangement of the mucous membrane of the colon. When the disease continues until the irritation passes successively into chronic inflammation and disorganization of the mucous tissue of the bowels, slight febrile irritation occurs—particularly towards evening, and a few hours after eating; the pulse becomes quick, small, and frequent; the skin dry and harsh; the body emaciates more or less rapidly; and at last œdema of the feet and legs, and occasionally dropsical effusions into the cavity of the abdomen ensue. In this aggravated form, the patient is apt to experience extremely severe colic pains an hour or so after taking food, and in general even the mildest ingesta are usually followed by tormina and diarrhœal discharges, and articles of food are sometimes passed in the stools in an imperfectly digested state. The appetite is generally very variable and capricious; being sometimes voracious, and at others entirely depressed. The stools too vary much both in relation to frequency and appearance. They are sometimes slimy, mixed with more or less fecal matter; at others abundant and watery—occasionally dark, reddish, or whitish, and often contain small portions of undigested food. On post-mortem examination of subjects who have died from chronic diarrhœa, or from some other disease accompanied with this bowel affection, we sometimes discover irregular patches of a fungoid appearance, and of a livid or dark red colour, slightly elevated above the surrounding parts, on the mucous membrane of some portion of the intestinal canal. In other instances, small well-defined ulcers with elevated edges, or extensive irregular ulcerations with ragged edges are met with. Not unfrequently the coats of the intestines are thickened at the parts where these ulcers are situated; and in some instances this thickening is so great as to diminish very considerably the area of the intestinal tube. In cases of this kind, says Broussais, the usual diarrhœal symptoms are apt to alternate with attacks of obstinate costiveness, and death occasionally occurs under symptoms resembling those of ileus. Sometimes, instead of ulcers, the mucous membrane is covered with numerous tuberculous elevations of different sizes; and occasionally extensive portions of this membrane are found covered with smooth cicatrices of ulcerations which have healed. Broussais observes that these ulcerations are always found most numerous in the cœcum, and about the lower portion of the colon. He thinks, and with great probability indeed, that when the feculent matters become fetid and putrid, whether from long retention or imperfect digestion, they cause irritation, and ultimately inflammation in that part of the mucous membrane where they are most apt to become accumulated. When death occurs at an earlier period of diarrhœa, the mu-

cous membrane of the colon, and of the ileum, is usually found in a more or less reddened or injected state, with slight thickening of its structure. This is particularly observed in those chronic diseases which during the latter period of their course are accompanied with colloquative diarrhœa. In the chronic diarrhœa of children, attending what is usually called marasmus, I have found in several instances on dissection, the mucous membrane of the lower portion of the small intestines and of the colon, exhibiting extensive tracts, consisting only of a congeries of minutely injected vessels.

Causes.—The remote or occasional causes of diarrhœa are exceedingly various. They may be divided into those which act directly on the mucous membrane of the intestinal canal; and those which act indirectly through the medium of the general system. Of the former kind are all irritating substances received into, or generated in the alimentary canal; and of these the most common are: irritating and indigestible articles of food and drink; acrid and vitiated secretions from the liver and intestinal exhalents; worms; acid generated in the bowels; fresh fruit, particularly such as are very sweet, or acid, &c. Limestone water is particularly apt to give rise to copious diarrhœa in those who have not been accustomed to its use; and new made cider, before it has undergone the fermentative process, is also extremely apt to excite this affection. Much, however, depends on the previous or habitual state of the irritability of the intestinal canal, with regard to the power of different articles to excite this affection. Some individuals, apparently in a state of good health, cannot take particular articles of diet or drink without suffering more or less from griping and diarrhœa; whilst in others no unpleasant effect whatever will result from the same articles. Idiosyncrasy also appears occasionally to be concerned in the production of this affection by causes of this kind. Thus in some persons, fresh milk almost invariably excites diarrhœal discharges; and I know an individual who generally becomes affected with diarrhœa when he eats fresh oysters. Diarrhœa produced by causes of this kind is, however, almost always of temporary duration, and depends on simple irritation, which generally readily subsides after the offending matter has been discharged, and other exciting causes do not supervene. Nevertheless, if the bowels have previously been in an irritable condition, or the patient be labouring under some organic visceral affection, instances which commence from such local irritating causes are apt to continue; and unless particular attention be paid to a careful avoidance of the further influence of the exciting causes of this affection, give rise to high irritation, inflammation, and finally ulceration in some portion of the intestinal canal.

Among the causes of diarrhœa that affect the alimentary canal through the medium of the general system, *cold*, particularly when applied in a humid way to the feet or abdomen, is one of the most common and powerful. When produced by this cause, it constitutes the *diarrhœa rheumatica* or *catarrhalis* of the German writers. Cases of this kind are most apt to occur during damp and variable weather, and the evacuations are generally very liquid or watery. Slight rheumatic or catarrhal symptoms are apt to accompany the disease—such as toothach, transient pains in the extremities, short cough and coryza, together with slight febrile irritation, towards evening, attended with a dry mouth and great thirst. The tormina are usually exceedingly severe. The occurrence of diarrhœa from cold, or the conjoined agency of humidity and cold, depends, no doubt, on the centripetal direction given to the circulation; in consequence of which the liver and capillaries of the mucous membrane of the bowels become engorged with blood, giving rise to a vitiated, or perhaps a superabundant secretion of bile and intestinal mucus, at the same time that the irritability of the bowels is morbidly increased.

Diarrhœa appears also sometimes to arise from an epidemic condition of the atmosphere, independent of its thermometrical or hygrometrical states. This variety of the disease usually occurs in the autumn, when the nights begin to be cool, after a very dry and hot summer, and generally during the prevalence of other forms of intestinal diseases—particularly dysentery and cholera. Cases that proceed from causes of this kind are commonly preceded by the same train of premonitory symptoms that usher in miasmatic fevers—such as a feeling of weight and anxiety in the præcordia, loss of appetite, bitter taste, tension and fulness of the abdomen, disturbed sleep, headach, some lassitude and aching pain in the back, and slight sensations of creeping chilliness. (Richter.) Diarrhœa arising from this cause frequently passes into the dysenteric form of the disease. It is probable that these cases depend on the conjoined influence of koino-miasmata and atmospheric vicissitudes—giving rise to increased irritability, functional disorder, and sanguineous engorgement of the liver and intestinal canal, in a way which will be more particularly referred to under the head of cholera. Besides these, there are many other general causes capable of producing violent and protracted diarrhœa. The repercussion of acute and chronic cutaneous eruptions sometimes gives rise to obstinate attacks of this disease. It may also be produced by violent affections of the mind, particularly sudden terror and grief. Diarrhœa occurs very frequently in visceral and other local affections attended with suppuration and ulcerative disorganization. Thus in the latter period of pulmonary consumption, colliquative

diarrhœa almost invariably occurs; and the same may indeed be said of every variety of disease attended with hectic fever, or extensive suppurations.

In febrile diseases, diarrhœa sometimes occurs as a critical evacuation.* It can never be regarded as salutary, however, where it depends on the supervention of phlogosis, or high vascular irritation of the mucous membrane of the bowels. When the discharge is watery, reddish, or muddy, mixed with flocculi of mucus, and the abdomen is tender and the tongue dry and red along the edges, it always indicates an aggravated condition of the disease, and the existence of mucous inflammation, and is of course a highly unfavourable occurrence. Critical diarrhœa appears generally to depend on a copious secretion of bile, or an increased discharge from the intestinal exhalents, co-operating, probably, with a morbid irritability of the bowels; and hence, salutary discharges of this kind are almost invariably bilious, mixed with more or less feculent matter and intestinal mucus. Watery discharges, free from bile, are rarely if ever indicative of a favourable tendency of the disease. During dentition, children are very liable to diarrhœa; but as this discharge, when moderate and unaccompanied with much gastro-enteric irritation, is calculated to lessen the tendency to preternatural determinations to the brain, it should not be checked in instances of this kind, unless it becomes excessive and very exhausting.

Prognosis.—When the diarrhœal discharge has been brought on by indigestible or irritating articles of food or drink, and consists principally of feculent matter and vitiated secretions, it may in general be readily checked, and unless greatly mismanaged, will rarely assume a dangerous character. In general, diarrhœa is most apt to assume a chronic and dangerous character when it arises from the influence of cold and damp air, or from the habitual use of unwholesome and indigestible diet, in individuals labouring under some chronic visceral affection, or whose general health has been much impaired by previous diseases, hardships, or a course of intemperate living. When we find the disease to continue long, with frequent, watery, and acrid discharges attended with tenderness in the abdomen to firm pressure, and extremely severe tormina, we may presume that there exists chronic inflammation, or at least high irritation in the mucous membrane of some portion of the bowels—and consequently that there is much danger of the occurrence of structural disorder in this tissue, if the disease be not soon removed by appropriate measures. Those

* Fr. Hoffman. Dissert. de Diarrhœa in Febribus Malignis Morbis Acutus Salutari. Buchner, Dissert.de Diarrhœa in Febribus Exanthematicis Salute et Noxa.

cases of diarrhœa that assume a strictly chronic character, and in which scanty and painful diarrhœal evacuations of an unnatural appearance, occasionally alternate with short periods of constipation, and severe pains are experienced in the tract of the colon an hour or two after eating, may be regarded as certainly dependent on mucous inflammation, and most probably with more or less ulceration, and consequently as being attended with great danger and difficulty in effecting a cure.

Diarrhœa from the irritation of dentition, as has just been remarked, is rather a salutary than a dangerous affection; but when this *symptom* of enteric disease is accompanied with a pale and fretful expression of the countenance, a hard and tumid abdomen, frequent picking at the nose, voracious appetite, and the discharge of undigested portions of food in the stools, it must be considered as an affection of very serious import.

Treatment.—In the treatment of diarrhœa it should always be recollected that the characteristic alvine discharges, by which this affection is recognized, and from which its name has been derived, *is a mere symptom of a primary intestinal disorder*, and that our remedies must be especially directed against this, the essential malady. If, then, we reflect that the local intestinal disease consists either in simple irritation—or in irritation with chronic inflammation—or finally, in irritation with chronic inflammation and disorganization of the mucous membrane of a greater or less proportion of the bowels, according to the grade of violence and duration of the malady, we shall have no difficulty in instituting a rational plan of treatment. In this, as in other affections, our remedial measures must be modified according to the nature of the exciting cause. Thus, where the disease is produced by suppressed perspiration from cold, the restoration and maintenance of the cutaneous exhalation, along with the remedies to be presently mentioned, will be peculiarly proper; where the irritation is produced by vitiated or redundant bile, mercurial remedies are especially applicable; and where a surfeit, or acrid and offensive ingesta have given rise to the disease, laxatives are indispensable in recent cases.

The principal indications in this form of intestinal disease, therefore, are, 1. To remove as much as possible every source of intestinal irritation; 2. To allay the morbid irritability of the mucous membrane of the bowels; and 3. To diminish the determination of the blood to the vessels of the intestinal canal.

In recent cases, where there is reason to presume that the intestinal irritation is kept up by vitiated secretions, or other irritating matters lodged in the bowels, recourse must be had to mild purgatives. This is especially necessary where diarrhœa is the consequence of indigestion, or of the reception into

the stomach of indigestible and irritating articles of food; or where the bowels are infarcted, or loaded with fecal matter, as occurs in the marasmus of children. It must be observed, however, that it is only in the earlier periods of diarrhœa, or where the mucous irritation has not passed into the state of *inflammation*, that any material advantage may in general be obtained from purgatives; and even in cases depending on simple irritation, the gentlest laxatives alone ought to be employed. Purgatives are, indeed, very often greatly abused in affections of this kind. Nothing is more common than the repeated use of active purgatives in diarrhœa. An individual becomes affected with looseness of the bowels. If it does not soon cease spontaneously, he takes a purge. The bowel complaint, however, continues, and convinces him that there is still something left which must be removed. To make himself sure of his objects, he takes a more active dose; but the tormina and discharges, instead of being mitigated, acquire greater violence. Astonished at the obstinacy with which the offending matter sticks to the bowels, he determines, once and for all, to get rid of the cause of his complaint, and swallows a double dose of the most active cathartic. He now begins to experience tenderness in the abdomen; the tormina and diarrhœal discharges continue; in short, he has developed inflammation which the most judicious management may not be capable of removing.

We cannot, however, always abstain from laxatives in instances manifestly connected with inflammation of the internal membrane of the bowels. Thus, where phlogosis, or a state of irritation closely approaching inflammation exists, in connexion with an accumulation of fæces and vitiated secretions, with a hard and tumid state of the abdomen—a combination of circumstances frequently met with in children, no hopes of procuring relief can be reasonably entertained, until these irritating matters are removed out of the bowels by a course of gentle aperient remedies. Fortunately, in cases of this kind, we may, in general, gain our object in this respect much more readily by mild than the more active articles of this kind, when assisted by an appropriate diet. A grain of calomel at night, and a moderate dose of castor oil on the following morning, assisted with three or four laxative enemata during the day, will, in general, answer well in such cases, (*marasmus*) without doing any injury to the inflamed bowels. Castor oil is decidedly the best purgative in cases of diarrhœa, attended with a high degree of irritation or phlogosis. One or two grains of calomel, or three or four grains of blue pill, with from one to two grains of ipecacuanha may be occasionally given to an adult, both with a view to its aperient effects and its influence upon the biliary organs, which always become more or less deranged in diarrhœa of

protracted continuance. Many writers recommend rhubarb as a suitable purge in this disease; and in recent cases from irritating matters lodged in the bowels, it will, no doubt, answer all the purposes that may be obtained from a remedy of this kind. In protracted instances, however, where there is high intestinal irritation, or chronic inflammation, it is much inferior to the cold-pressed castor oil. From its tonic, along with its aperient powers, rhubarb was formerly thought to be peculiarly suited to the treatment of this affection, under the erroneous notion, that diarrhœa is generally the consequence of a relaxation or loss of tone in the intestinal tube. Where it may be deemed necessary to administer an aperient in cases manifestly connected with chronic inflammation, or a highly irritated condition of the bowels, the castor oil may be very advantageously given in union with from fifteen to twenty drops of laudanum.

In all bowel affections attended with inordinate discharges, a preternatural determination of blood takes place to the vessels of the intestines, with more or less torpor of the cutaneous exhalents. This is more especially the case in instances of long standing, and contributes very materially to the support of the intestinal irritation. Remedies which are calculated to counteract this centripetal direction of the humours, are therefore especially proper in affections of this kind. For this purpose, *opium* in combination with small doses of calomel and ipecacuanha, constitutes an excellent remedy after the irritating contents of the bowels have been evacuated by suitable laxatives. Opium and calomel have a direct tendency to allay the morbid irritability of the mucous membrane of the alimentary canal, and when given in conjunction with small portions of ipecacuanha, seldom fail to excite the activity of the cutaneous exhalents. In recent cases of diarrhœa, where the discharge depends on simple irritation of the bowels, the exhibition of one of the following pills every four hours, after the operation of a dose of castor oil, will seldom fail to check the complaint.* Minute portions of calomel too, will frequently arrest the progress of the disease. (Dr. Ayre.) From a sixth to a fourth of a grain of calomel may be given every hour or two. In the diarrhœa of infants arising from acidity of the primæ viæ and deficient biliary secretion, this article, given in union with two or three grains of prepared chalk, is often peculiarly beneficial, but as the irritation is apt to be transferred from the

* R. G. opii gr. iii.
Pulv. ipecac. gr. xii.
Calomel, gr. ii.
Conserv. rosar. q. s.
M. Divide into 12 pills.

bowels to the brain in young children, opium may do mischief, by promoting the determination to the head.

Very frequently diarrhœa is induced and sustained by impaired digestion in consequence of a weakened state of the stomach. Here alterative doses of calomel and the use of mild tonics, together with simple, unirritating, and digestible diet, will commonly prove beneficial.

Astringent remedies have been much employed in diarrhœa; but where the mucous membrane of the bowels is in a state of high irritation or inflammation, articles of this kind are almost always decidedly pernicious. In instances where the discharge is kept up by a slight degree of irritation and relaxation of the intestinal exhalents, benefit may occasionally be obtained from remedies of this kind; but even in such cases, they may in general be very properly dispensed with. The astringents most commonly employed in diarrhœal affections, are kino, alum, acetate of lead, sulphate of zinc, and the infusions of logwood, blackberry-root, the root of geranium maculatum, &c. Astringents should never be resorted to where the tormina are very severe, and there is a tenderness or soreness to the touch in the abdomen. I have repeatedly known great injury done by the use of such articles in the ordinary bowel complaints of children; and there can be no doubt that as a general rule, astringents deserve to be reprobated in affections of this kind. Judging from my own experience, opium and ipecacuanha are decidedly more efficacious than astringents, even in instances which may be deemed favourable to the beneficial operation of the latter class of remedies.

What I have hitherto said, refers more particularly to recent cases of diarrhœa, before the intestinal irritation has become fixed or converted into inflammation and its consequences. When the disease assumes a chronic character, it generally becomes exceedingly obstinate, and often resists every mode of remediate treatment. One of the most important measures in such cases, is the avoidance of every kind of stimulating aliment. The food should consist wholly of farinaceous fluids, light broths, animal jellies, rice, barley, oat-meal gruel, milk, &c. In all cases, indeed, whether recent or chronic, such a diet is decidedly the most proper; but in the latter form of the disease, it is absolutely essential to success in its treatment.

In some instances of chronic diarrhœa, we may succeed in removing the disease by a rigid adherence to this simple and unirritating diet in conjunction with the employment of small doses of calomel and opium, the occasional use of the warm bath, *leeching* and counter-irritating applications to the abdomen. I have in several instances derived great advantage from the employment of small doses of Dover's powder, in union with

the acetate of lead, according to the following formula.* Not unfrequently, all the means just mentioned, however judiciously employed, will entirely disappoint us in our attempts to remove the disease. I have known instances of this affection to continue for nine or ten months, although all the foregoing remedies, together with an appropriate diet had been diligently used. In cases of this obstinate character, the internal use of *balsam copaive* will sometimes do much good. What I have already said under the head of chronic enterites, in relation to this remedy, applies fully to the chronic form of the present affection. It is not probable however, that it can procure any permanent relief in cases attended with ulceration of the intestinal mucous tissue; yet, even in cases of this kind, I have known considerable temporary benefit derived from this article. In a case of pulmonary hepatization, with purulent expectoration, attended for nine months with continued and extremely painful diarrhœa, the balsam capaive emulsion generally gave very considerable relief for four or five days, after which the symptoms recurred with their usual degree of violence, notwithstanding the use of this medicine. On dissection, a number of irregular ulcerations were detected in the mucous membrane of the colon and the lower portion of the small intestines. In a case of chronic diarrhœa of upwards of six months continuance, I succeeded in effecting a perfect cure by means of this remedy, given to the extent of from thirty to forty drops three times daily, and fifteen drops of laudanum with each dose. In this case the diarrhœal discharge depended, no doubt, on simple chronic inflammation, without ulceration of the mucous tissue. Dr. Elliotson has lately introduced a new remedy to the notice of the profession, for the cure of chronic diarrhœa, dependent on ulceration, which has been employed with much success at St. Thomas' Hospital in London—namely, the *sulphate of copper in union* with opium. Cases that had resisted almost all the remedies usually accounted the most efficacious in this affection, yielded readily to this remedy. The dose is half a grain twice a day, with a grain of opium, increasing the quantity of the former article gradually to two and even three grains in a day. From the known good effects of weak solutions of this preparation when applied to chronic ulcerations, it is not improbable that its operation in this way may occasionally prove very serviceable in diarrhœa depending on ulcers of the mucous membrane of the bowels; and although the vegetable astringents are always unequivocally injurious in such cases, some benefit may also arise from its peculiar astringent influence on the engorged and dilated capillaries of the mucous membrane. Whatever internal remedies may be resorted to

* R. Pulv. ipecac. compos. ℈i.
Pulv. acetat. plumb. gr. vi.
M. Divide into 6 equal parts. S. Take one every 4 hours.

in cases of this kind, it will always be proper to keep up the regular action of the cutaneous exhalents—and it is especially useful to excite the extreme vessels of the external surface of the abdomen. For this purpose, a broad flannel roller should be constantly worn round the body; and the patient must be particularly careful not to expose himself to the influence of damp and cold weather, and above all to avoid getting wet and cold feet. All kinds of alcoholic liquors also must be avoided. Mucilaginous fluids, such as infusion of mallows, or flaxseed, or barley water, slightly acidulated with sulphuric acid, form the best drink.

CHAPTER XXIII.

CHOLERA.

Cholera is an affection of the alimentary canal, characterized by very frequent and violent vomiting and purging, with severe tormina, and cramps in the muscles of the abdominal parietes and extremities. The disease almost always comes on suddenly. Pain, and a sense of tension in the epigastrium, is generally the first symptom by which it makes its attack. This is soon followed by violent colic pains about the umbilical region, accompanied with exceedingly distressing nausea. In a few moments after these symptoms come on the vomiting and purging commence with extreme violence, and continue, with but very short intervals, until the system is exhausted, if speedy relief be not obtained. During the intervals between the attacks of vomiting, the patient is usually harassed with continual nausea, and an indescribable feeling of distress in the epigastrium. The alvine discharges are at first thin and watery, and generally with little or no admixture of bile; nor is the fluid ejected from the stomach usually of a bilious character during the early period of the disease. After the disease has continued for an hour or two, however, the bile begins to make its appearance pretty copiously in the evacuations, and towards the conclusion the fluid discharged consists, in many instances, almost entirely of bilious matter. As the disease advances the tormina become more and more severe and continual, and the purging and retching are almost incessant. One of the most distressing affections belonging to this disease, is the extremely painful cramps which, in severe cases, occur in the abdominal muscles, and in those of the inferior extremities. In cases of no great violence the cramps occur principally, and sometimes exclusively, in the muscles of the legs; but in rapid

and very severe attacks, the muscles of the trunk, as well as of the upper and lower extremities, are alike affected in this way. The thirst is always exceedingly urgent; but every thing received into the stomach is almost immediately thrown up again. As soon as the disease is completely developed, the pulse is small, feeble, irregular, or intermitting; the hands and feet become cold; the countenance pale, shrunk, and expressive of great distress; a cold sweat breaks out on the extremities and face; and extreme prostration speedily ensues.

Cholera is one of the most rapid and fatal forms of disease. It seldom continues beyond twenty-four hours, without terminating favourably or fatally; and in many instances it ends in death in the course of three or four hours, and sometimes in a much shorter period. In the cholera of India death generally takes place within two or three hours after its commencement. In this extremely fatal variety of cholera, the patient is generally suddenly seized with great prostration, unquenchable thirst, a scarcely perceptible pulse, cold and clammy sweats, cramps in every part of the body, inexpressible anxiety of feeling, extreme restlessness, syncope, excruciating tormina, constant retching, and very frequent stools of a thin, whitish, or starchy fluid. If the patient survive this, the first stage of the disease, which is by no means common, some degree of reaction usually ensues in the course of from twenty to forty hours; and the liver begins to pour out an abundance of dark, thick vitiated bile, which is discharged in the stools, and which may be regarded as an indication of a favourable crisis in the disease.

Etiology and Pathology.—A superabundance of vitiated bile in the stomach and bowels was formerly, and by some is still regarded as the immediate cause of this very dangerous malady. The term *cholera** is, indeed, sufficiently expressive of the notions once universally entertained concerning the nature of this affection, Dr. Cullen says, "the matter ejected both upwards and downwards appears manifestly to consist chiefly of bile;" and Dr. Gregory, though he rejects the idea of its dependance on a redundant and vitiated secretion of bile, says that the disease "commences with nausea and unremitted *bilious vomiting*, &c." In truth, almost all writers, up to the time of Dr. Bateman and Dr. James Johnson, mention a copious and vitiated bile as the exciting cause of this affection; but the erroneousness of this sentiment is now well known by all who have kept pace with the progress of pathological science. So far, indeed, from there being a redundant secretion of bile in cholera, there is actually a deficient formation of this fluid from functional torpor of the liver; and it would appear that the hepatic torpor is in direct proportion to the violence of

* From χολη, bile, and ῥεω, to flow.

the disease. No one, indeed, who has attentively observed the early symptoms of cholera, can for a moment doubt of the correctness of this statement; for, however abundant the discharge of bile may be after the disease has continued for some hours, this fluid never appears in the evacuations during the early period, or what may be termed the first stage of the disease. The observations and researches that have been published of late years—and they have not been limited—in relation to the pathology of cholera, render it evident, that the liver, and indeed the whole system of the portal circulation, are extremely engorged with blood. In the cholera of India, the liver, in subjects who die during the first stage of the disease, is alway found enlarged and greatly engorged with blood, and the in ternal surface of the stomach and bowels marked with large patches of highly injected and dilated vessels. In the cholera of infants, I have never seen an instance in which bile appeared in the evacuations, except after the disease had taken a favourable turn; and in the few dissections which I have witnessed of subjects who had died of this disease, the sanguineous congestion of the liver and mucous membrane of the alimentary canal was very conspicuous. So far, therefore, our knowledge of the pathology of this affection appears to be sufficiently certain; but how are we to account for the extreme irritability of the stomach and bowels, and the excessive vomiting and purging? Can hepatic torpor and congestion in the portal system of vessels give rise to this morbid condition of the alimentary canal? or are we to consider this state of the liver, and the general engorgement of the portal vessels, only as a concomitant phenomena, and in no way causative of the characteristic gastric and intestinal affections? From some of the circumstances just mentioned, it would appear, indeed, that the hepatic torpor and congestion has no small share in the production of the gastro-intestinal disorder. The fact, that the symptoms almost always begin to abate as soon as the liver resumes its functions and pours out a copious flood of bile, strongly favours this opinion. Strong sanguineous congestion, and torpor of the liver, is almost always attended with great irritability of the stomach. In the malignant grades of bilious fever, the vomiting during the first stage, is often incessant and extremely distressing; and the fluid ejected is wholly free from bilious matter. If death takes place in this stage, the liver is always found exceedingly engorged with blood, and the vessels of the stomach are in a similar state of congestion; but when the disease continues until large evacuations of black and pitch-like bile take place from the bowels, an abatement of all the symptoms usually ensues.

With regard to the remote causes of cholera, it is manifest that high atmospheric temperature constitutes the principal

agent concerned in its production. In our own climate this affection appears almost exclusively during the warm months of summer; but it is nevertheless probable that elevated temperature acts rather as an essential *predisposing*, than as an *exciting* cause of the disease. Cool and damp night air, or exposure to a current of fresh air after the liver and skin have been over-excited by the previous influence of solar heat and exercise, is one of the most common exciting causes of this affection. When the cutaneous and hepatic functions, while in a state of inordinate activity, are suddenly arrested by the influence of cold, the blood retreats from the surface to the internal vessels; the portal circulation becomes engorged, and the capillaries of the mucous membrane of the bowels strongly congested. This injected or engorged state of the capillaries of the mucous membrane of the alimentary canal gives rise, we may presume, to morbid irritability of this structure, and consequently to the characteristic phenomena of the disease. Much may also depend on the influence of koino-miasmata in the production of this affection. The tendency of this agent to excite and derange the functions of the liver is well known, and when operating in conjunction with high atmospheric heat, as it always does, its tendency to enhance the predisposition to this affection is, no doubt, very considerable.

In some instances of intermitting fever, the paroxysms are ushered in by violent attacks of cholera, the vomiting and purging usually coming on towards the termination of the *cold stage*, and continuing until the febrile reaction is fully developed. Sometimes cholera returns in quotidian paroxysms, commencing with a slight cold stage, and terminating in free perspiration without any distinct hot stage.

Cholera may also be excited by the direct irritation of indigestible and irritating articles of food and drink; but causes of this kind rarely produce the disease unless the system is predisposed to it by a debilitated state of the digestive organs, or by general relaxation and exhaustion from the influence of high atmospheric temperature.

CHOLERA INFANTUM.

The cholera of infants differs in several essential points from the ordinary cholera of adults. It is almost always distinctly febrile, and very frequently commences in a gradual manner with more or less diarrhœa of several days continuance before the vomiting supervenes. It is also particularly liable to become protracted in its duration, or to assume a chronic form, a circumstance which is scarcely ever noticed

in the other varieties of the disease. The liver appears to be as inactive in this as in the preceding form of cholera; for when once fully developed, the evacuations during the early period of the disease, are wholly devoid of any appearances of bilious matter, consisting either of a whitish frothy, or of a watery and almost colourless fluid. If the disease does not rapidly exhaust the vital powers and terminate fatally during the first few days, the patient begins to emaciate; the extremities become cold; the head and surface of the abdomen extremely warm; the skin dry and harsh; the countenance pale and shrunk; the eyes dull and sunk; and the pulse small, irritated, and frequent. If the disease is not vanquished by proper remedial measures, the little patient by degrees becomes somnolent; he sleeps with the eyes half open, rolls about his head when awake, and at last sinks into a state of insensibility and coma, and dies under symptoms resembling those of the last stage of hydrocephalus. When the disease is very protracted in its course, aphthæ usually appear on the tongue and inside of the cheeks; the face acquires an œdematous appearance; the alvine discharges become so acrid as to excoriate the parts about the anus; and towards the fatal conclusion, spots of effused blood under the cuticle sometimes appear on various parts of the surface.

The duration of this variety of cholera is exceedingly various. It may prove fatal in five or six hours, or continue for several weeks, and even months, until the body is reduced to a state of extreme emaciation, and yet terminate favourably. The majority of deaths take place before the termination of the ninth day.

When death takes place early in violent and rapid cases, the liver and vessels of the mucous membrane of the alimentary canal are found, on dissection, strongly engorged with blood; "and where the disease had continued for some length of time before death, ulceration and even abrasion of the lining membrane of the stomach and bowels," are usually discovered.*

The *etiology* of the cholera of infants differs in some important circumstances from that of the ordinary form of the disease in adults. Both these varieties of cholera are almost exclusively confined to the hot months of the year; but cholera infantum is vastly more prevalent in large and crowded cities than in the country—a circumstance which does not obtain in relation to the cholera of adults. During a practice of twelve years in the country, I met with but two or three cases of this disease in infants. Again, cholera infantum occurs almost ex-

* Dr. Condie. Observations on the Pathology and Treatment of Cholera Infantum, &c. in the Philadelphia Journal of Med. and Phys. Sciences, May, 1825.

clusively during the third and twenty-fourth months of age; in other words, during the period when the process of primary dentition is going on. There are, therefore, three causes whose concomitant influence is extensively concerned in the production of this variety of cholera, namely, high atmospheric heat; the contaminated air of crowded cities; and the irritation produced by dentition. From the great prevalence of this disease during the hot months of summer in the more filthy parts of crowded cities, it has been supposed that it is of *malarious* origin, and "a mere variety of the bilious fever of our climate, the force of which is turned inwards upon the intestines." (Condie.) In support of this sentiment, it has been alleged by the respectable physician just quoted, that though seldom met with in salubrious districts of the country, "a majority of the children fall victims to cholera infantum in the neighbourhood of marshes, or in low, wet, and otherwise unhealthy situations." This, I apprehend, will not be confirmed by the observations of those who practise in the neighbourhood of paludal districts. Unquestionably, cholera is much more common, both in infants and adults, in such localities, than in the salubrious parts of the country, and there can be no doubt, that miasmata have a considerable tendency to favour the occurrence of cholera, whether in adults or in infancy. If, however, koino-miasmata be the principal agent concerned in the production of this malady, why is the disease so exclusively confined to a particular period of infancy in our cities? And why, we may further ask, does it commence so early as the latter month of June, and usually acquire its most extensive sway in July, before the ordinary paludal diseases are wont to make their appearance, except here or there perhaps a few instances? Let it be observed too, that we frequently find this fatal disease of infants extremely rife in this city, when scarcely any of the other diseases justly ascribed to the miasmata in question occur among our inhabitants. High atmospheric temperature and the irritation of dentition appear to be the principal remote causes of this affection. But as these causes very seldom produce cholera in infants enjoying the pure air of the country, there must be some other circumstance peculiar to populous cities which especially favours their tendency to develope this disease. This accessory or predisposing cause consists probably in the *impure air* of cities, by which the infantile system is rendered irritable and peculiarly predisposed to suffer disturbance from the irritation of dentition.

It seems to me highly probable that *erethism of the brain*, caused by the irritation of difficult dentition in the peculiarly irritable habit of body just mentioned, is frequently deeply concerned in the production of this malady. Throughout the

whole course of the disease, the head is always preternaturally warm—and in most instances the child is peculiarly restless and fretful some days previous to the accession of the disease. The tendency of cerebral irritation to cause inordinate irritability of the stomach and bowels is well known. Diarrhœa is a very common, and in general a salutary occurrence during the process of painful dentition. In the commencement of hydrocephalus, great gastric irritability and frequent vomiting is very rarely absent. In concussion of the brain vomiting is often a very troublesome symptom: and *sea-sickness*, which is often so violent as to resemble cholera, appears to depend entirely on the peculiar cerebral excitement occasioned by the swinging or rocking motion of a vessel at sea. The great tendency of cholera infantum, in its chronic form, to terminate in a state of cerebral oppression and coma, seems also to show that the brain is especially predisposed to inflammation, or to that peculiar morbid condition which constitutes what is usually called acute hydrocephalus.

We may, therefore, presume that in the irritable condition of the system, produced by the influence of a very warm and contaminated atmosphere, dentition causes more or less cerebral irritation, which being reflected on the stomach and bowels, renders them preternaturally irritable. If in this state of the alimentary canal, the cutaneous exhalents are over-excited and debilitated by high atmospheric temperature, the slightest reduction of temperature, a current of fresh air, or damp night air, will readily cause a sudden torpor of these emunctories. The blood will retreat from the surface to the internal organs, and give rise to engorgement of the vessels of the liver and mucous membrane of the bowels, by which the gastro-intestinal irritability will be still further increased, and the characteristic symptoms of the disease excited.

Treatment of Cholera.

The principal indications in the treatment of the cholera of adults, are to allay as speedily as possible the irritability of the stomach and bowels; to restore the action of the skin and liver; and to determine the circulation from the internal to the external parts. As the progress of this disease is always extremely rapid, the most prompt and energetic means should be at once resorted to, with the view of moderating its violence; and for thi spurpose we possess no remedies so powerful and certain in their effects as opium, and the application of a large and active sinapism to the region of the stomach and liver. When the disease supervenes soon after having taken a full meal or some indigestible and irritating articles of food or drink, the patient should be directed to take copious draughts

of chamomile or balm tea, or warm water, in order to obtain the speedy evacuation of the irritating substances lodged in the alimentary canal. In all cases, indeed, it will be proper in the commencement of the disease, to allow the patient the free use of some bland drinks, both with the view of washing out the contents of the intestinal canal, and of moderating the painful and rapidly exhausting effects of frequent ineffectual efforts of vomiting and purging when the stomach and bowels are empty. As soon, however, as the irritating contents of the stomach and bowels are evacuated, a large dose of opium should be administered, and the patient kept from taking any drinks for at least thirty minutes after the medicine is taken. From 80 to 100 drops of laudanum should be given at once; and the same quantity, mixed with a small portion of warm water, thrown into the rectum. If vomiting occurs soon after the first dose is taken, the laudanum should be repeated in doses of from 30 to 40 drops every fifteen minutes, until its influence on the system be fully obtained. At the same time a large sinapism must be laid over the right hypochondrium and epigastrium. Instead of sinapisms, we may resort with nearly equal advantage to active rubefacient embrocations. I have in several instances derived very prompt benefit from the application of the oil of monarda punctata to the abdomen, in conjunction with the internal use of large doses of laudanum. This oil is one of the most active local irritants we possess. When applied in an undiluted state it inflames the skin in a few minutes, and causes exceedingly severe pain in the part. The spirit of turpentine may also be used for this purpose, but its effects are less prompt and powerful than those of the ol. monarda. Upon the prompt and free use of opium and external revulsive applications our chief reliance must be placed. The practice of giving warm spiced brandy, and other powerfully exciting articles of this kind, is, I think, highly improper, and well calculated to do much mischief. Brandy may be allowed in the latter stage of the disease when the prostration is extreme, and it is absolutely necessary to support the sinking powers of the system by the most potent of our diffusible stimulants; but if it be given during the early period of the disease, with the view of moderating the excessive vomiting and purging, it will not only generally disappoint our expectations, but often manifestly aggravate the symptoms of the complaint. The sedative powers of opium, however, are eminently calculated to allay the extreme irritability of the alimentary canal, and when promptly and efficiently given, will seldom fail to procure complete relief in the course of sixty or eighty minutes. In not a single instance in which I have resorted to this valuable remedy, did it fail to arrest the vomiting and purging within the period just mentioned; and the only fatal case I ever saw was treated

chiefly with warm spiced brandy. If from six to eight grains of opium can be introduced into the stomach, and retained for fifteen or twenty minutes, we may calculate, almost with certainty, on the speedy removal of the disease. When the laudanum is immediately thrown up again, it should be repeated, again and again, until its effects are obtained. I have in the course of an hour given nearly an ounce of laudanum in this way before the gastric irritability was allayed, without any injurious consequences from its ultimate narcotic operation. Where this medicine is immediately rejected by the stomach, we may obtain its effects by external application with almost the same promptitude and certainty as if it were retained in the stomach. For this purpose the cuticle should be removed from the epigastrium, which may be speedily done by means of the nitric acid, as practised by Mr. Powel in the cholera of India. Two parts of this acid diluted with one part of water is to be applied by means of a sponge upon the whole region of the stomach; and as soon as the patient feels considerable pain from its impressions, the part is to be washed with a solution of the carbonate of potash. The cuticle may now be easily detached, so as to leave the cutis exposed and raw. Upon this surface from ten to twelve grains of morphia may be applied, either in the form of a plaster, or by sprinkling the powder over it, and covering it with a piece of linen thinly spread with simple cerate. By this procedure we at once obtain the advantage of a powerful counterirritating application, and of the full influence of the opium. When the irritability of the stomach and bowels is in some degree allayed, it will be proper to employ calomel in small but frequent doses, with the view of stimulating the action of the liver. Half a grain of this article may be administered every half hour, and continued until the alvine discharges become bilious, or the disease is subdued. Dr. Ayre speaks highly in favour of minute and frequent doses of this remedy in cholera, and there can be no doubt of its entire adaptation to the treatment of this affection. Where the disease is very violent and rapid, however, we cannot depend on its operation without the conjoined influence of efficient doses of opium. It may be very advantageously given in union with powdered opium, in the proportion of two grains of each, every half hour, until the narcotic effects of the former are manifested, when the calomel should be continued alone in half grain doses. The warm bath may be used with occasional advantage in the commencement of the disease; and where the exhaustion is great, and cramps in the muscles of the extremities severe, much benefit will generally result from rubefacient frictions—particularly from frictions with a strong tincture of capsicum. When the pulse sinks and the extremities become cold, the patient should be wrapped in flannels soaked with

hot brandy, and in this state recourse must also be had to the internal administation of diffusible stimuli. One of the best articles of this kind, according to my own experience, is a solution of camphor in vitriolic ether. Of a solution of a drachm of camphor in an ounce of ether, a tea-spoonful may be given every half hour until the reaction is considerably increased. In one instance, where the pulse was scarcely perceptible and the extremities cold and clammy, this solution, given in the way just mentioned, produced the happiest effects. I have stated above, that drinks should be withheld for some time after administering the first dose of laudanum, in order, if possible, to prevent it from being thrown off before it can produce any impressions on the stomach; with this exception, it will always be proper to allow mild mucilaginous fluids in a warm state—such as barley-water—as long as the vomiting and purging continue; for, as has already been stated, the exhaustion produced by the excessive vomiting and purging is much less rapid when the stomach and bowels are freely supplied with fluids, than when they are nearly empty, and the evacuant efforts are ineffectual or attended with but small discharges.

After the disease is subdued, the patient should take light and nourishing diet, such as animal broths. It will also be proper, during the period of convalescence, to wear a flannel roller round the abdomen; and to take a few grains of blue pill, with a grain of ipecacuanha every evening, on going to bed; and when the digestive powers remain weak, a table-spoonful of the infusions of colomba, or gention, or a wine-glassful of chamomile tea, with a few grains of the carbonate of ammonia, may be taken three or four times daily.

Treatment of Cholera Infantum.

Although the morbid condition of the liver and alimentary canal in cholera infantum does not appear to differ from that of the cholera of adults, yet the treatment proper in the former, differs in several very essential points from that which is best calculated for the removal of the latter variety of the disease. Besides the indications already mentioned for the treatment of ordinary cholera, we have, in the present variety, the important one of obviating irritation and sanguineous congestion of the brain; and hence opium, which is decidedly the most valuable remedy in the cholera of adults, cannot be employed without great hazard of doing mischief in the cholera of infants. Some practitioners, under an idea that the stomach contains offending matter which spontaneous vomiting is incapable of throwing off, commence the treatment with the exhibition of a gentle emetic; but this practice is not only founded on an erroneous view of the pathological condition of the alimentary canal, but what is still more to the purpose, it is generally decidedly injurious.

From what was said above in relation to the pathology of this affection, it would appear that torpor of the liver and skin, in connexion with cerebral irritation, constitutes the immediate cause of the excessive irritability of the stomach and bowels. Our principal object therefore must be, to restore these two functions; to obviate irritation and sanguinuous congestion in the brain; and to determine the blood from the engorged vessels of the liver and mucous membrane of the alimentary canal. To answer these purposes, I generally commence the treatment with the application of from ten to twelve leeches to the temples, the exhibition of minute portions of calomel and ipecacuanha, and a large stimulating poultice over the abdomen. I am persuaded by what I have repeatedly observed in my practice, that great benefit will in general result from local depletion from the head, as well as the application of blisters behind the ears, or on the back of the neck, in this affection. Within the last four years I have not treated an instance of this complaint, in which I did not at once apply blisters behind the ears, and in most instances, it appeared to me, with unequivocal advantage. This at least I may confidently affirm, that since I have adopted this practice, I have been much more successful in the management of this disease than previously. Where the pulse is irritated and the head very warm, leeching at the temples or behind the ears is particularly indicated, and will seldom fail to procure very manifest relief. In an extremely severe case which I lately attended in a child about eighteen months old, twelve leeches applied to the back of the ears, was almost immediately succeeded with great abatement of the violence of the symptoms. With the view of moderating the gastro-intestinal irritation, and of stimulating the action of the liver, minute portions of calomel and ipecacuanha constitute, I think, the most valuable internal remedy we possess for combating this disease. From one-sixth to a quarter of a grain of calomel in union with half a grain of ipecacuanha, should be given every hour or two, and continued until the evacuations become mixed with bilious matter. Let it be borne in mind, that so long as the liver remains torpid and the alvine discharges free from bilious matter, the disease may be regarded as still possessing all its violence and dangerous tendency, whatever temporary abatement may occur in the severity of the vomiting and purging. The appearance of bile in the stools, whether green or dark, is always to be hailed as a very favourable sign, and the sooner the liver can be brought to resume its secretory action, the greater in general will be the probability of ultimate success in our attempts to subdue the disease. Ipecacuanha in small doses is a most excellent auxiliary to the calomel, in affections attended with morbid irritability and excessive peristaltic action of the alimentary canal.

Its tendency to counteract inordinate action of the bowels when given in small doses, is well known; and its tendency also to excite diaphoresis, still further enhances its applicability in this and other similar intestinal affections. Where from a tumid and tense state of the abdomen there is reason to presume that the bowels are loaded with fecal matter, the quantity of calomel at each dose should be larger, so as to procure its purgative operation. I have occasionally given a grain every two hours until its evacuant effects were procured, and afterwards continued it in doses of about one-sixth of a grain every hour. Dr. Edward Miller appears to have been the first physician who particularly recommended minute doses of calomel in cholera infantum; and under judicious management it is unquestionably a very valuable remedy in this affection. Except under the circumstances just mentioned—namely, a loaded state of the bowels, purgatives are not, in general, advisable in the commencement of the disease. Where the disease continues, however, until the liver under the exciting influence of the calomel pours out a large quantity of bile, mild laxatives are highly useful. In a case which I attended during the present season, the vomiting and purging were in a great measure arrested on the third day of the disease. The infant, however, sunk into a state of stupor from which it was very difficult to rouse it. As the evacuations from the bowels were very dark and small, and the vomiting had ceased, I prescribed a full dose of castor oil. In about two hours after the oil was taken copious evacuations of a pitch-like matter took place from the bowels; and the little patient was almost immediately freed of all the alarming symptoms under which it laboured. Where the disease comes on gradually, and proceeds slowly, it may perhaps be better to commence at once with purgative doses of calomel, than with the minute alterative portions mentioned above. In cases of this kind the bowels are frequently much loaded by fecal matter, which it is of much importance to evacuate as speedily and completely as can be done without resorting to the more active or irritating purgatives.

At the same time that the means already indicated are employed, external revulsive applications to the abdomen, more especially to the epigastrium and right hypochondriac region should be used. So far as my own experience enables me to judge, blistering the region of the stomach is decidedly the most efficient application of this kind in the present affection. Before the blister is applied, the part should be slightly bathed with spirits of turpentine in order to procure vesication as speedily as possible. I have seldom, however, suffered the vesicatory to remain on the skin longer than four or five hours. As soon as the skin is uniformly inflamed, which in children occurs generally in about four hours, and sometimes

much sooner, the blister should be removed and an emollient poultice applied over the whole abdomen, including of course the inflamed surface. This will in a short time excite the inflamed vessels to pour out a copious quantity of serum under the cuticle, and form a large blister, which should then be opened and dressed with fresh mercurial ointment, prepared without turpentine or other irritating substances. Where the general habit is phlogistic and the pulse manifestly febrile, leeching both from the head and the region of the liver are important preliminaries to the employment of visicatories.

The warm bath also is an excellent auxiliary in the treatment of this disease; and this measure is more especially necessary when the skin is very dry and harsh, and the pulse quick and tense. While the patient is immersed in warm water up to the neck, it will be proper to apply a napkin wet with cold water to the head. Various other external applications to the abdomen have been recommended, for the purpose of moderating the gastro-intestinal irritability of this affection. Rubefacient embrocations and cataplasms, made of stimulating herbs and spices, may be beneficially applied to the abdomen; and where the disease is violent and rapid in its progress, recourse should be had to the most prompt and active articles of this kind—such as sinapisms, ol. monarda,* spirits of turpentine, and even diluted nitric acid, in the way mentioned for the treatment of the cholera of adults.

I have already stated as a general rule, that the use of opium is highly improper in this affection. The great tendency to congestion and inflammatory action of the brain in this species of cholera, renders all medicines of this kind decidedly prejudicial, when given in the early period of the disease, or where in its advanced stage symptoms of cerebral oppression are manifestly present. Nevertheless, where the disease assumes a chronic form, and the patient is very restless and wakeful, with a dry, harsh, and withered state of the skin, and no particular marks of cerebral congestion, small doses of Dover's powders, in union with minute portions of calomel, will sometimes produce very excellent effects. In a few instances of this kind, I have given half a grain of Dover's powder with the sixth of a grain of calomel and two grains of magnesia, every two hours, to a child under two years old, with unequivocal advantage. I must confess, however, that I have witnessed some instances of this kind, in which the employment of this narcotic was speedily followed by more or less stupor and cerebral oppression, without any beneficial effect on the intestinal disorder.

* ℞. Ol. monardæ, ℥i.
Spirit camphoræ, ℥ss.

With regard to the astringent and absorbent remedies, formerly so much employed in the treatment of this affection, we can scarcely express too strong a sentence of condemnation against their use in the acute form or stage of this malady. I am entirely persuaded, that "much of the mortality of the disease has been produced" by the injudicious employment of cretaceous juleps, astringent mixtures, aromatic draughts, and opiates. Where the disease becomes chronic, or continues rather in the form of chronic diarrhœa than of cholera, the milder astringents may occasionally do some good. Thus, I have in a few cases known a decoction of the root of the geranium maculatum in milk procure considerable advantage; but I have much more frequently found it either to produce no manifest impression on the disease at all, or to do unequivocal injury. The employment of unirritating tonics in the chronic form of the disease attended with great debility and relaxation, is much better calculated to afford relief than the use of astringents and absorbents. I have frequently procured very considerable benefit in the advanced periods of the disease from the employment of a solution of the tartrate of iron. Forty grains of this preparation may be dissolved in two ounces of water, to which half an ounce of the lemon syrup is to be added. Of this from thirty to forty drops may be given to an infant four or five times daily. Dr. Robert Jackson speaks very highly of finely powdered charcoal in diseases of the intestinal canal attended with diseased secretions; and Dr. Condie states that he has used this article with very decided advantage "in the latter stage of the disease, when it had become in some degree chronic, and the discharges from the bowels were acrid, dark-coloured, and offensive." From my own experience I can say nothing of this practice, but I do not doubt its usefulness under the circumstances just mentioned. From five to ten grains of the powdered charcoal, with four or five grains of rhubarb and a grain of ipecacuanha, may be given every three hours. (Condie.)

When from the violence and rapidity of the disease, or its long continuance, the exhaustion becomes very great, the extremities cold, and the pulse very small and feeble, internal as well as external stimulants become necessary. Under such circumstances, stimulating frictions, together with the internal use of wine-whey, milk-punch, or a weak solution of the carbonate of ammonia, are indispensable to support the sinking energies of the system.

To relieve the colic pains which are apt to occur from flatulent distention of the bowels in the advanced periods of chronic cholera infantum, Dr. Condie strongly recommends a few drops of the spirits of turpentine; and my own experience enables me to speak favourably of this remedy. I have generally, how-

ever, preferred the oil of juniper to the turpentine, and I am inclined to think it more certain in its effects in this respect than the latter. No remedy has appeared to me so promptly to allay the colic pain, and promote the expulsion of flatus from the bowels, as a weak solution of common soot sweetened with sugar.

Particular attention must be paid to the proper regulation of the diet throughout the whole course of the disease. If the child is weaned, nothing but the blandest liquid articles of food must be allowed. Boiled milk; liquid preparations of arrow-root, tapioca, sago, and rice; thin oatmeal gruel, barley decoction, or a solution of gum arabic, are the best articles for food and drink in every stage of cholera. In some instances of a chronic character, I have known beef tea or weak chicken broth to produce a favourable change in the state of the stomach and bowels. In chronic cholera infantum, the appetite sometimes suddenly begins to crave urgently for certain strong and stimulating articles of food, such as salted herring or shad; old bacon; salted and smoked beef, &c., whilst the stomach loathes all of the lighter and unirritating articles of nourishment enumerated above. When this occurs, it will be proper cautiously to gratify the newly awakened appetite, however opposed to the ordinary dietetic rules the indulgence may appear to be. "I have seen many children recover," says Dr. Rush, "from being gratified in an inclination to eat salted fish, and the different kinds of salted meat. In some instances they evince an appetite for butter, and the richest gravies of roasted meat, and eat them with obvious relief to all their symptoms." Without these strong determinations of nature, however, it would be highly improper to allow such coarse articles of food; but where the inclination for them is strongly expressed, it may and ought to be gratified.

Nothing contributes more to the removal of this disease than the enjoyment of the pure air of the country. Whenever it is practicable, therefore, the little patient ought to be immediately removed into the country; for this change is often sufficient in recent cases to remove the disease in a very short time, without any other remedial applications. If the circumstances do not admit of a removal from home to a suitable situation in the country, some advantage may be gained by carrying the patient about in the open air; and still more by frequent rides into the country in an open carriage.

As *preventive* measures, gestation, or residence in the pure air of the country; the avoidance of cool night air after a very warm day; nourishment at the breast during the process of dentition, or where circumstances render this impracticable, a very light liquid diet—particularly milk, and a thin prepa-

ration of arrow-root, with beef-tea or weak chicken-broth, tepid bathing, and lancing the gums as soon as they become swollen by the protruding tooth, are the most important.

CHAPTER XXIV.

COLIC.

Writers have divided colic into a great many varieties; but as most of these distinctions are mere nosological refinements, I shall notice those only which have a practical bearing.

The most common variety of colic is that which is occasioned by irritating and indigestible articles of food, and which Dr. Gregory from this circumstance calls *accidental colic*, but which is more commonly designated by the term flatulent, from the prominent symptoms of indigestion and flatulency which always attend this painful affection.

A weak and irritable state of the digestive organs predisposes in an especial manner to this variety of colic. In persons so predisposed, even the ordinary articles of food will sometimes give rise to the disease; and when food of an indigestible character is taken, more or less suffering from colic is almost inevitable. Salted meats—all kinds of pastry—crude vegetables, such as cucumbers, celery, and unripe fruit—sour fruit—fresh and warm bread, &c. are especially apt to excite the disease in persons labouring under weak digestive powers. When articles of this kind are received into the stomach, no inconvenience is usually felt until an hour or two after they are swallowed. In some instances, where the stomach is weak and inirritable, the food passes into the bowels in an imperfectly digested state; in which case, the colic pains may not come on for several hours after eating, and usually occur most severely about the umbilical region. More commonly, however, the pain commences in the stomach or duodenum, before the offending substances have had time to pass lower down in the alimentary canal. At first the patient experiences a sense of distention and uneasiness in the pit of the stomach, or occasionally in the left iliac region. This is soon followed by a dull, peculiarly distressing and sickening pain in these parts, accompanied with a feeling of strong distention of the stomach and bowels. The pain now rapidly increases in violence until it becomes extremely severe. In some cases the pain continues

with but short *remissions* for several hours. More commonly, however, they come on in severe paroxysms, with complete though transient intervals of ease. During the exacerbations of the pain, the patient is apt to move to and fro, with the body bent forwards, and the hands firmly pressed against the abdomen. When the stomach is the principal suffering organ, large quantities of air are from time to time forced up, and this is generally immediately followed by some mitigation of the pain. When the colon is the part chiefly affected, the flatus passes off downwards; but this seldom takes place to any considerable extent until the disease is about terminating. The bowels are always torpid in this affection, and the tongue soon becomes covered with white fur.

Diagnosis.—The diagnosis of this variety of colic is not attended with any difficulty. The relief obtained from firm abdominal pressure—the agitation and writhing motions of the patient, as well as the absence of fever, and the paroxysmal character of the pains, and frequent eructations of flatus, distinguish it prominently from gastro-intestinal inflammation. From *bilious* colic it may be distinguished by the absence of bilious vomiting, as well as of the icterode appearance of the eyes, of the extreme obstinacy of the constipation, and of the headach and bitter taste in the mouth which characterize the bilious variety of colic. From *colica pictonum* it is readily distinguished by the hardness and retraction of the abdominal muscles, and the gradual accession of the colic produced by lead.

Prognosis.—Flatulent colic is not attended with much danger, unless it terminates in inflammation of the gastro-intestinal mucous membrane—a termination which sometimes, though rarely, occurs. In some instances, where the flatulent distention is very great, it produces paralysis of a portion of the bowels, or destroys to a degree the power of contraction, giving rise to habitual costiveness, and an especial tendency to a recurrence of the complaint. It is not improbable, I think, that paralysis of a portion of the intestinal canal, induced in this manner, may be the principal occasion, in some cases, of introsusception, or invagination of the bowels. Where flatulent colic is produced by very indigestible and irritating ingesta, it may give rise to rapid inflammation and gangrene.

Treatment.—The treatment of this variety of colic is seldom attended with much difficulty. In slight cases, where the flatulent pains are seated in the stomach, and there is no reason to presume the existence of chronic irritation in the mucous membrane of this organ, we may, in general, soon procure relief by administering some of the carminative and antispasmodic stimulants. Dry frictions with flannels or a flesh-brush,

is an excellent means for removing flatulent pains of the stomach. By rapid frictions on the epigastrium the flatus is generally discharged in copious torrents, and where there is no fixed irritating cause in the stomach that requires removal, we may often, in this way, soon put a termination to the gastric pains. From five to ten grains of camphor, with about thirty drops of vitriolic ether, and the same quantity of laudanum, has frequently afforded prompt relief in my hands. The oil of juniper or the spirits of turpentine will also generally allay the pain in slight cases. Articles of this kind will, in general, give relief where there is no particular irritating cause lodged within the alimentary canal; but where the disease is the immediate consequence of crude, indigestible, and irritating ingesta—or where it comes on within an hour or two after taking a full meal of stimulating, mixed, and indigestible food, carminatives and antispasmodics will not only be insufficient, but generally decidedly injurious, unless they are used in conjunction with proper evacuants. Where there is reason to believe that the offending matter is still in the stomach—which may be presumed to be the case when the disease comes on within an hour or two after taking a full meal, recourse should at once be had to an emetic dose of ipecacuanha. To moderate the excessive suffering of the patient as speedily as possible, we may administer some carminative along with the emetic. From twenty to twenty-five drops of the essence of peppermint may be advantageously given in such cases, with about thirty grains of ipecacuanha. When the pain is confined to the bowels, occupying the colon, an active purgative, in union with aromatics, or some of the more volatile antispasmodics, ought to be given, and purgative enemata administered at short intervals until the bowels are freely moved. Castor oil with spirits of turpentine is an excellent purgative in colic from the irritation of acrid substances or imperfectly digested articles of food lodged in the bowels. I have often employed this mixture with prompt and complete success. In some instances, however, the sufferings of the patient are so extremely great, that we cannot wait for the operation of a cathartic to procure relief. In such cases, almost the only remedy upon which any reliance can be placed is *opium*, given in large doses. From two to three grains should be given at once, or what is better, an equivalent dose of laudanum. This will always procure relief in the course of forty or fifty minutes; and in many instances of this severe character, nothing but this remedy, in enormous doses, will allay the extreme agony of the patient. The opium, when given in large doses in this affection, does not materially impede the subsequent operation of cathartics—and the administration of a purgative should never be neglect-

ed as soon as the violence of the disease is moderated.* When the disease occurs in robust and plethoric habits, venesection should be practised, in order to obviate the occurrence of inflammation, and to promote the operation of the necessary purgatives. Little or no advantage usually results from the employment of external revulsive applications; yet when after the subsidence of the colic pains the epigastrium remains tender to pressure, and the tongue becomes furred in the middle, with a florid appearance of the edges, leeching and blistering cannot be safely dispensed with.

After the disease has been subdued, the patient should confine himself to the lightest and most digestible articles of food for several days.

BILIOUS COLIC.

There is another variety of colic, which, from the manifest derangement of the biliary organs, and symptoms indicative of a superabundant or vitiated secretion of bile, has with propriety been denominated *bilious colic.*

This variety of the disease appears to depend on the same remote cause which gives rise to intermitting, remitting, and other forms of miasmatic fevers; and it accordingly most commonly occurs during the autumnal months—particularly after a long continuance of a very warm and humid state of the atmosphere.

Before the more urgent and characteristic symptoms of the disease come on, the patient generally experiences headach, loss of appetite, a bitter taste in the mouth, thirst, nausea, and occasionally bilious vomiting. After these symptoms have continued for an indefinite period of time, acute pain in the stomach and bowels supervenes, moving at first from one part of the abdomen to another, though generally most severely felt about the umbilicus. This pain is often intensely severe during the exacerbations. In the early stages of the complaint, pressure on the bowels affords some degree of relief; but as the disease advances the abdomen becomes tender to the touch. Nausea and

* For this purpose we may use either the castor oil and turpentine, in the proportion of six drachms of the former to two drachms of the latter—or the following pills:

R. Extract. colocynth. compos. ʒss.
Calomel ℈i.
Tart. antimonii gr. i.
M. Divide into 10 pills. Take 2 every hour until the bowels are freely moved.—Or,

R. Pulv. jalapa gr. xvi.
Calomel gr. viii.
M. To be taken all at once.

and bilious vomiting occur more or less frequently from the commencement of the malady; and the patient always experiences a temporary abatement of his sufferings immediately after a spell of vomiting. Although the stomach is morbidly irritable, and extremely apt to be excited to vomiting, yet the bowels are almost invariably extremely torpid, being generally in a state of obstinate constipation from the beginning of the disease. The pulse seldom deviates materially from its natural condition during the early period of the complaint; but in the advanced stage it becomes increased in fulness, force, and frequency. In violent cases the hands and feet are sometimes quite cold during the exacerbations of the pains. About the second or third day of the disease the eyes and skin become more or less suffused with a yellow tinge; and in some cases, indeed, these manifestations of biliary disorder occur several days before the pain in the abdomen commences.

In cases of great severity the nervous system usually suffers considerable disturbance—the patient becoming despondent, and affected with slight spasmodic twitches in the muscles of the extremities.* Dr. Staley, in the interesting paper on this disease, just referred to, observes, that he has sometimes met with cases in which much numbness and tremor of the superior extremities occurred; and he saw one case in which the "arms were so completely paralyzed that all power of voluntary motion was destroyed." Paralysis of the wrists has indeed been frequently noticed as an occurrence in this affection, and this circumstance has been adduced as an argument in favour of the identity of this affection with the variety of colic produced by lead. Eructations of flatus are very common in bilious colic; and as in the former variety of the disease, they are always followed by a temporary mitigation of the abdominal pain.

Causes.—I have already said that bilious colic appears to depend on the same remote cause which gives rise to autumnal bilious fever. Dr. Rush includes this variety of colic among the usual forms of miasmatic fevers; and Dr. Staley observes, that he has uniformly found "the cases of bilious colic most numerous after a summer remarkable for the prevalence of bilious remitting and intermitting fever." My own observations correspond fully with these statements. In the autumns of 1821–2 and 3, when bilious remittents prevailed very extensively, I met with a greater number of cases of bilious colic than had previously come under my notice during a period of fifteen years. Although there can scarcely exist a reasonable

* An Inquiry relative to the Causes, Nature, and Treatment of Bilious Colic. By Dr. Henry Staley, of Maryland.—See Medical Recorder, vol. vi. p. 231.

doubt, that koino-miasmata is intimately concerned in the production of this malady—more especially when it prevails, in a degree, epidemically; it must, nevertheless, be admitted, I think, that other causes of a sporadic character do occasionally give rise to this affection. I have met with cases of strongly marked bilious colic under circumstances that precluded all ideas of the agency of miasmata.

It is generally believed that the liver is morbidly active in this disease—and that a redundant secretion of bile is one of its most essential conditions. This idea is favoured by the circumstance, that from the very commencement the fluid thrown from the stomach is always mixed with a considerable portion of bilious matter. There is much reason, however, to doubt the correctness of this opinion. Dr. Staley observes with much plausibility, that if we reflect on the quantity of bile which is secreted in a healthy individual, and the obstruction which exists to its passage downwards from the constipated state of the bowels in this disease, we can have no difficulty in accounting for the quantity of bile discharged by the mouth, although there be a paucity in the secretion. It is not improbable, indeed, that so far from there being too copious a secretion of bile in this disease, there is, in fact, a deficiency of this fluid. The functions of the liver are unquestionably deranged, and the bile secreted is, without doubt, vitiated. That this is the case may be inferred from the analogy which bilious colic bears to *cholera*—an analogy which has been particularly noticed by many writers. Dr. Gregory observes, "that bilious colic is closely allied to bilious diarrhœa and cholera, occurring along with them, and apparently differing from them only in some unessential features." The opinion that the liver is in a state of torpor, rather than of increased activity, is moreover strengthened by the fact, that so soon as the alvine discharges become bilious, an amendment of the disease usually takes place; and that however frequent the discharges may be, they seldom procure any particular relief when they are devoid of bilious matter. "When bilious stools are not brought away," says Dr. Gregory, "it is common to find chocolate coloured motions passed, frequently in vast quantity, reducing the patient to a state of great weakness. Dr. Musgrave, in a valuable paper on this disease, states that he invariably found the liver in a highly congested state, and in the majority of instances there were strong marks of intestinal inflammation and its consequences.*

The etiology of bilious colic does not appear to differ materially from that which is common to cholera, dysentery, &c. The atmospheric heat and miasmata act probably as predispos-

* Med. Repository, Nov. 1825.

ing causes; and sudden changes of atmospheric temperature, by which the cutaneous exhalents and secretory vessels of the liver are struck torpid and the blood determined to the internal organs, constitute perhaps the principal *exciting* cause of the disease.

Treatment.—The principal indications in the treatment of bilious colic are: to free the bowels of their irritating contents; to allay the morbid irritability of the stomach and intestinal tube, and to restore the healthy actions of the liver. Some writers speak much in favour of the employment of emetics in the beginning of the disease, and there can be no doubt of their usefulness where there is much nausea, without full vomiting in the commencement of the attack. Under such circumstances, the exhibition of an emetic should be among the first measures resorted to for the removal of the disease. Much bilious matter, of a vitiated appearance, is usually thrown off and considerable temporary relief almost invariably ensues. In cases attended with much *spontaneous* vomiting, however, it will not be necessary to resort to the use of emetics. In such instances, it will be sufficient to request the patient to take copious draughts of eupatorium or chamomile tea, or some other diluent, in order to facilitate the complete evacuation of the vitiated bile and other irritating matters lodged in the stomach. Where an emetic is indicated, the tartarized antimony will in general answer better than any other article of this kind on account of its greater tendency to excite the action of the liver and of the alimentary canal. Many writers advise the exhibition of purgatives, as soon as the stomach has been well freed of its irritating contents. In the majority of cases, however, the stomach is so extremely irritable that medicines of this kind cannot be retained a sufficient length of time to enable them to act on the bowels. As the early evacuation of the intestinal canal is, however, all-important, measures should be immediately taken to allay the gastric irritability, so as to enable us to administer a cathartic with a prospect of advantage as early as possible. So far as my own experience enables me to decide, *calomel* is decidedly the best internal remedy we possess for preparing the stomach for the reception and retention of purgatives. Given in small and frequent doses, in conjunction with the application of sinapisms or epispastics to the epigastrium, this mercurial will seldom disappoint us in allaying the irritability of the stomach sufficiently to enable us to administer with effect the necessary cathartics. What renders this remedy still more useful as an antecedent measure to the use of purgatives, is its well known powers to correct functional disorder of the liver, as well as its tendency to cooperate as an aperient with the purgatives which are to follow. After the stomach has been freed of its contents either by spon-

taneous vomiting, or the operation of an emetic, half a grain of calomel may be given every half hour, at the same time that a large epispastic is applied to the region of the stomach and liver, and continued until the irritability of the stomach is moderated. When this is accomplished, a full dose of some active purgative should be administered; and for this purpose we may give from fifteen to twenty grains of calomel, followed in about three hours with an ounce and a half of castor oil, or a draught of strong infusion of senna and manna. In some instances, however, none of the usual purgatives will be retained, notwithstanding the previous employment of small doses of calomel and counter-irritating applications to the epigastrium. Where this is the case, it is best to depend on calomel alone with the view of procuring the evacuation of the bowels. "When the gastric irritability is very great, calomel," says Dr. Staley," "combined with gum-arabic will be retained when every other cathartic will be rejected." This corresponds entirely with my own experience. I have in several instances ultimately procured free alvine evacuations by administering from five to six grains of this mercurial every three or four hours until from twenty to thirty grains are taken, and then assisted by repeated purgative enemata. The employment of enemata should, indeed, always accompany the use of purgatives in this affection. An excellent injection for this purpose, is the following mixture of castor oil and turpentine;* or we may use a strong infusion of senna and Glauber salts. As soon as the bowels are freely evacuated, a full dose of opium ought to be administered. This valuable narcotic allays the irritation and spasmodic contraction of the intestines; and when given in combination with calomel, it does not impede the subsequent operation of cathartics, and tends, in no small degree, to equalize the circulation and excite the cutaneous and hepatic functions. When the obstinacy of the disease is very great, and the bowels resist the effects of purgatives, the calomel, with an occasional dose of opium, should be given with a view to its constitutional influence. In general, cathartics will operate freely as soon as the mercurial influence ismanifested by the soreness of the gums. A general mercurial action has in fact a most beneficial influence upon the disease, whatever may be its grade of violence: and in prescribing calomel in the commencement of the disease, with a view to purgative effects, we must not lose sight of the more permanent and equally important influence, procured by its speci-

* R. Ol. ricini ℥iss.
Spir. terebinth. ℥ss.
Infus. sem. lini Oj.
Sapo venet ʒi. M.

fic effects upon the system, and particularly upon the liver. Deranged hepatic function constitutes, probably, the foundation of the malady; and the removal of this morbid condition constitutes a primary object in the treatment. After the bowels have once been freely evacuated, we must by all means endeavour to keep up regular alvine evacuations throughout the subsequent course of the disease. For this purpose, castor oil, or infusion of senna and manna, with an occasional dose of calomel and the daily use of one or two purgative enemata, in general answer very well.

In robust and plethoric subjects, or where the pulse is vigorous and tense, and the tenderness to abdominal pressure considerable, blood-letting is a very important auxiliary remedy in this affection. It will not only tend to moderate the irritability of the stomach, and to favour the regular operation of the necessary purgatives, but what is still more important, it lessens the liability to inflammation which in plethoric and robust habits is always very considerable in this affection. When the pulse is vigorous, it will be best at once in the commencement of the disease to draw blood, to the extent of making a decisive impression on the system; and the operation may be advantageously repeated whenever the state of the pulse, and other symptoms indicate its propriety at every stage of the disease.

Epispastics, sinapisms, and warm fomentations, also, are valuable auxiliaries to the remedies already mentioned. When the irritability of the stomach is very great, or where the epigastrium and abdomen are very tender to the touch, a large epispastic should be applied over the region of the stomach—having previously practised an efficient blood-letting—and an emolient cataplasm laid over the lower part of the abdomen. These applications assist, in no inconsiderable degree, to allay the irritability of the stomach, and they are especially useful to obviate intestinal inflammation—an occurrence which it must always be our principal aim to prevent.

When, in the beginning, the fluid thrown from the stomach is of an acrid quality, alkaline remedies should be administered. Calcined magnesia may be given either in union or in alternation with other purgative medicines; or from twenty to thirty grains of the bi-carbonate of potash dissolved in a draught of senna and manna, will in general answer well for this purpose.

The *warm bath* will occasionally afford considerable relief in violent cases of this affection; and warm fomentations to the abdomen may also be very beneficially used.

After the disease has been subdued, much care is necessary on the part of the patient, in relation both to diet and exposure. There are few diseases which are so apt to be re-excited by even slight errors in either of these respects, as the

present one. For eight or ten days after an attack of this disease, the diet should be of the lightest and most digestible kind. Rice, sago, dry toast, beef tea, &c. should be used for three or four days, after which small quantities of the most digestible meats may be allowed. It is particularly important to avoid getting cold and damp feet. To lessen the liability of a relapse, it will be proper to wear a flannel roller round the abdomen for some time after the subsidence of the disease; and the patient must be particularly cautioned against drinking very cold water during the first three or four days of convalescence.

CHAPTER XXV.

COLICA PICTONUM.

This variety of colic has been described under a diversity of names—as dry gripes; Devonshire colic; colica pictavensis; c. saturnina; c. damnoniensis; rachialgia metallica; painter's colic, &c. It generally makes its approaches in a very gradual manner—commencing with symptoms of gastric derangement, such as irregular and weak appetite, foul eructations, languor, slight nausea, constipation, with transient pains and a feeling of weight and tightness in the abdomen, more or less drowsiness, and disinclination to mental and corporeal exertion. By degrees the pain in the epigastrium and umbilical region becomes more and more severe and constant. The abdomen is hard, retracted, and somewhat tender to pressure, the bowels immovably torpid, and the stomach in most instances very irritable. The pain in the abdomen suffers occasional remissions, but except for a moment after vomiting, and in mild cases, no perfect intermissions take place as in the other varieties of colic. The exacerbations of the colic pains are protracted in duration, and exceedingly agonizing; and during the first two or three days the retching and vomiting is generally very distressing, although a momentary mitigation is usually experienced immediately after the contents of the stomach are ejected. In violent and rapid cases, or what may be called the acute form of the disease, the pains extend from the umbilical region upwards to the chest and arms, and downwards to the pelvic viscera, giving rise to paroxysms of violent pain in the region of the bladder and rectum, with much difficulty of voiding urine, and a distressing sense of weight, constriction, and bearing down in the lower part of the abdomen. During the exacerbations, the anxiety and agitation are extreme—cold sweats break out on the extremities and face; the countenance

is pale, contracted, and expressive of great suffering; and in some cases of very great violence, partial syncope, delirium, convulsions, paralysis of the wrists, and severe pains in the extremities occur. When remedial measures fail to make a favourable impression on the disease, the vital energies at last begin to sink; the abdominal pains abate; the stomach becomes extremely tender and puffy; the thirst unquenchable; vision imperfect; and finally œdema of the feet, drowsiness, a pale livid hue of the face, and occasionally suppression of urine, and more or less tenesmus, with great dyspnœa, ensue; and the patient dies under symptoms of apoplexy, or in a state of syncoptic insensibility.

Colica pictonum, if not subdued by an appropriate treatment, or where the remote cause continues to act on the system, or the patient has already suffered one or two attacks of the disease, is particularly apt to assume a chronic character, and to become associated with a variety of fixed and peculiarly distressing affections. The excretory and nutritive functions become impaired; the mental and physical energies torpid; the capillary circulation extremely inactive, giving rise to a pale, sallow, and leaden hue, and a shrivelled, dry, and harsh state of the surface of the body; the temper becomes irritable, desponding, taciturn, and gloomy; the countenance lurid and expressive of deep suffering; the body emaciates; *the forearms become wasted and palsied;* the abdomen exceedingly hard, painful to pressure, and tumid; the legs œdematous, with pains in the joints, particularly in the ankles and toes, and great tenderness of the soles of the feet. The patient is extremely restless at night, his vision becomes weaker and weaker, the œdema extends up the legs, and the abdomen enlarges with dropsical accumulations. In some cases, paraplegia, epilepsy, mania, or total imbecility of mind ensue; and the patient is reduced at last to a state of complete exhaustion and emaciation, and dies under symptoms of apoplexy, or of dropsical effusion into the cavity of the thorax or pericardium, &c.

On post mortem examination, traces of inflammation with patches of disorganization almost always occur in the mucous membrane of the stomach and intestinal canal. In many instances, considerable portions of the intestines are so contracted as scarcely to admit the passage of an ordinary sized quill into them; and occasionally the stomach, and whole tract of the bowels, are in a state of preternatural contraction. The vessels of the abdominal and thoracic viscera are generally very turgid with blood; but the muscular structure, every where, exhibits a pale and exanguious appearance. The omentum is often marked with livid spots. M. Thomas, a late French writer, states, that in the dissection of eleven persons who had died of this disease, he found the meninges of the brain strongly

injected, with softening and other morbid appearances in the cerebral structure, with serous or sanguineous extravasations between the membranes.

Causes and nature.—Lead, in whatever way and form it may be brought to act on the system, is almost the only well ascertained cause of this variety of colic. It would seem that the fumes of melted lead, and the white oxyd of this metal, are most apt to act injuriously on the animal system, and to give rise to this extremely distressing affection. It has been said, that the acetate of lead is incapable of producing this disease, and that no apprehensions need be entertained on this account, in prescribing the internal use of this article. It must be admitted, indeed, that the acetate manifests a much less deleterious tendency in this way, than any of the other forms under which this metal may exert its poisonous influence on the system. It would appear that the tendency of lead to produce cholic is not confined to the human species. It has been distinctly noticed that in the neighbourhood of smelting furnaces and white lead manufactories, pigs, poultry, and other animals, occasionally become affected with a similar or the same disease. Plumbers, painters, glaziers, gilders, the workers in lead mines, and in white lead manufactories, are most exposed to the influence of this poison, and of course almost peculiarly liable to this disease. Formerly, it was the practice in some parts of Europe to put *litharge* into new made wine, for the purpose of rendering it palatable, or to convert acid into sweet wine. This gave rise to the extensive prevalence of this form of colic in some districts; and it is from its endemic prevalence at *Poitou* in France, from this cause, that the disease obtained the name of *colica pictonum*.

It has been contended, nevertheless, that other causes are capable of producing this variety of colic. Crude wine, fresh cider, and other drinks, acidulated with fresh vegetable juices, are mentioned as possessing a tendency, under otherwise favourable circumstances, to produce this disease; but the correctness of this opinion has, I think, with great propriety been doubted; for, if instances of this kind are accurately examined into, it will perhaps generally be found, that in such cases these drinks have been tainted with lead employed in some part of the machinery or vessels made use of. Without doubt, these beverages may give rise to severe colic; but we have no satisfactory evidence that they are capable of producing the protracted train of distressing symptoms which are known to arise from the poisonous influence of lead. Larrey, and some other late writers assert, that atmospheric vicissitudes, in conjunction with malaria, is a frequent source of this form of colic; but it is probable that when produced by these causes, the disease does not differ from the preceding variety—namely

bilious cholic. It has indeed been maintained, that what are called bilious and lead colic, are essentially the same affection; but, although the former often bears a very close resemblance in its course and characteristic phenomena to the latter, the more decided manifestations of biliary derangement in the former, and the great aptitude of the latter to pass into a chronic state and to become complicated with various affections of a most distressing character, among other distinctive circumstances, seem to indicate a radical distinction between them. Of the nature or proximate cause of colica pictonum, there is but little known of a satisfactory character. That the nervous system is prominently affected, is indeed very evident, but whether the ganglionic, or the cerebral nerves are the primary seat of the irritation or morbid excitement, is by no means evident. M. Thomas, to whose dissections I have already referred, conceives that the primary location of this affection is in the brain; but the facts upon which he grounds this opinion—namely, the very obvious traces of high vascular congestion, and other organic affections of the brain which are frequently detected on post mortem examination, are by no means satisfactory; since they may, and I presume are, rather the ultimate effects, than the causes of the malady. The disease may be compared to a *tetanic spasm* of the intestinal canal, the result probably of a primary morbid condition of the ganglionic nerves, gradually extending to the nerves of relation.

Treatment.—The indications for prescribing in this affection are: 1, to allay the pain and spasm of the bowels; 2, to evacuate the intestinal canal; 3, to correct and excite the hepatic and intestinal secretions; and 4, to obviate the occurrence of inflammation in the stomach and bowels.

As the tendency to intestinal inflammation in this affection is always very considerable, it will be proper, in the first place, to reduce the momentum of the circulation, more especially in robust and plethoric subjects. If the pulse is hard and full a vein should be immediately opened, and the blood suffered to flow until a manifest impression is made on the action of the heart and arteries. Blood-letting does not appear to exert any direct influence over the violence of the symptoms, but it is obviously proper as a means to lessen the chances of the supervention of inflammation, and it tends in no inconsiderable degree, to render the operation of the other remedies more certain and beneficial. As soon as the action of the pulse has been moderated, we must prescribe with the view of allaying the pain and spasm of the intestinal canal; for unless this be effected, little or no advantage can be gained from the use of purgatives, on the free operation of which much of our ultimate success depends. For this purpose *opium* is decidedly the most valuable remedy we possess. When given in large doses

it not only allays the spasm and excruciating pain in the bowels, but by these effects it contributes also very greatly to the free operation of cathartics. In order to excite the action of the liver, and to obtain the general mercurial influence on the system as speedily as possible, as well as to predispose the bowels to be properly effected by the subsequent purgatives, it will be proper to administer the opium in union with calomel. Two grains of opium, with five or six grains of calomel, should be given every two hours until the abdominal pains are removed. After the pain has been thus allayed, the calomel should be continued at the same intervals of time in two or three grain doses, with half a grain of opium, until the gums begin to manifest the mercurial influence. As soon as this is perceived, recourse must be had to active purgatives; and it will scarcely be advisable to resort to them before the general mercurial action has been obtained: for previous to this, the most active cathartics will almost universally fail; and what is still more unfavourable, they frequently give rise to severe vomiting and gastric distress, with but very small or no alvine evacuations, however vigorously urged. When, however, the mercury has affected the system, the skin generally becomes moist and of a natural temperature, and a full dose of an active purgative will rarely fail to procure free evacuations. I have repeatedly given the opium and calomel for three or even four days before an attempt was made to evacuate the bowels; and I have had much reason to be satisfied with the result. Castor oil in union with the spirits of turpentine constitutes a very excellent purgative in cases of this kind. An ounce of the former with three drachms of the latter may be taken at once, and half this quantity repeated afterwards every hour until the bowels are freely moved. I have not, in a single instance, failed to procure free evacuations from the administration of this mixture, after the gums had become affected with the calomel. A strong infusion of senna and manna, with a portion of Epsom salts dissolved in it, will also, in general, answer well as a purgative in this affection; but it is less certain, I think, than the oil and turpentine, and much more apt to produce very severe tormina during its operation. If the pain returns after the operation of the purgatives, recourse should be again had to opium, and the mercurial impression must be maintained by the regular administration of a few grains of calomel every three or four hours. Where the torpor and spasm of the intestinal canal offer a very strong resistance to the operation of cathartics, purgative enemata will be very useful auxiliaries. A strong infusion of senna with an ounce of Glauber salts dissolved in it; or an emulsion formed of two ounces of castor oil, with half an ounce of the spirits of turpentine and a pint of

warm flaxseed tea, should be repeatedly thrown into the rectum until the bowels begin to discharge themselves freely. After the use of large doses of opium and calomel, however,—more especially when a general mercurial excitement has been established—the difficulty of moving the bowels will seldom be considerable.

The employment of external counter-irritating applications will rarely contribute materially either to mitigate the symptoms or to shorten the duration of their progress. Nevertheless, where from the violence and obstinacy of the disease there is reason to apprehend the supervention of gastro-intestinal inflammation, vesicatories, or pustulation with tartar emetic ointment, and leeching, ought by no means to be neglected. From some reports that have been published in the French journals, it would seem, indeed, that leeching is capable of doing much good in this affection. Recamier cured a case very promptly by the application of fifty leeches to the abdomen, after the *routine* treatment pursued in the Hospital La Charité had been ineffectually employed.* Warm fomenta-

* This method of treating colica pictonum—which is denominated "*traitement des Pères de la Charité*," consists in the following course of management:—On the first day a purgative enema, made by boiling half an ounce of senna in a pint of water, and adding four ounces of the sulphate of soda, and four ounces of antimonial wine; and during the day the patient takes occasional draughts of a drink made by dissolving an ounce of the sulphate of magnesia and three grains of tartar emetic in two pints of cinnamon-water, with the addition of an ounce of the syrup of buck-thorn. At five o'clock in the evening an enema is administered, consisting of eight ounces of the oil of walnuts, suspended in twelve ounces of port wine. Three hours afterwards a bolus containing one grain of opium and a drachm of treacle is given. On the second day the "*eau benite*"—an emetic potion, consisting of six grains of tartar emetic, dissolved in eight ounces of tepid water, is given; the half at first, and the remainder in half an hour. When the vomiting has subsided, draughts of a diaphoretic ptisan are given during the rest of the day, made by putting china root, lig. guaiac. and sarsaparilla, of each a drachm, into two pints of water, and boiling it down to one. An ounce of sassafras and half an ounce of liquorice root are then added, and the mixture gently boiled and strained. At night the above anodyne enema and bolus of opium are again administered. During the third day the patient drinks two pounds of the diaphoretic ptisan, to which, however, an ounce of senna is added—the whole being taken in four equal portions; and besides this he continues the use of the ptisan without the senna. In the evening the above mentioned purgative enema, composed of a decoction of senna, sulphate of soda, and antimonial wine: in two hours afterwards the anodyne enema, (walnut oil and port wine); and in two hours more the anodyne bolus.

The fourth day is commenced with a purgative potion, composed of two drachms of senna boiled from eight down to six ounces, to which is added half an ounce of the sulphate of soda, a drachm of powdered jalap, and an ounce of the syrup of buck-thorn; and the patient drinks the dia-

tions and the warm bath may also be used with occasional advantage in this variety of colic.

Alum is much praised by Richter and other German writers as a remedy in this affection; and I have myself used it in two instances with remarkable success. Richter declares that it will sometimes procure relief where opium and all other remedies fail; and from a case which I treated lately, I am inclined to think that there is much foundation for this assertion. In this instance I employed venesection, vesication to the epigastrium, and opium with calomel in very efficient doses. The pains and intestinal spasms were but moderate whilst the patient was under the influence of the opium, and on the evening of the third day very free evacuations were produced from the bowels by the castor oil and turpentine purge, assisted by enemata of senna infusion. On the following morning, however, the patient's sufferings were as great as at first; and although they were again allayed by opium, and the gums were manifestly affected by the calomel, it was evident from the general distress and firmness of the abdominal parietes, that the disease was not subdued. Another pretty free action of the bowels was obtained by the oil and turpentine, with the assistance of purgative enemata; but the patient's sufferings were still extremely severe on the following day. I now resorted to the alum—giving twenty grains of it with a grain of opium every three hours. On visiting my patient next morning, I found him almost entirely free from pain, and was informed that he had five or six very copious evacuations during the night. He recovered rapidly under the use of purgative enemata, and an occasional dose of castor oil, with small doses of calomel and opium. This remedy was first employed by Grashuis,* and it is highly praised by Lentin.†

It is said that cold water dashed on the body and limbs of the patient has occasionally excited the action of the bowels after opium, calomel, the warm bath, and purgatives had been ineffectually used.

phoretic ptisan mentioned above; and in the evening the oleaginous enema and the anodyne bolus are repeated. All the fifth day is occupied with the sudorific laxative ptisan used on the third day; with the purgative enema (used on the first day) at four in the afternoon; the anodyne (oil and port wine) enema, at six o'clock, and at eight the opium bolus. This treatment is adopted by Ratier, and it is said that it accomplishes many cures. Dr. Lerminer also follows this practice rigidly, and with no inconsiderable success. Pinel calls this method "*empirisime consacré par une longue suite de succéss.*"

* De colico pictonum tentamen. Amstel. 1752. Ejusd. Appendix decadem observationum sestens, 1755.

† Memorab. circa ærem, vitæ genus, sanitat, et morbos Clausthaliens. p. 115.

For the removal of chronic colica pictonum, or the various distressing consequences of this affection, mercury is without doubt the best remedy we possess. It should be given to the extent of producing gentle ptyalism; and this should be regularly maintained for three or four weeks, during which the patient ought to go into the warm bath daily, and avoid with all possible care the influence of cold or atmospheric vicissitudes. Dr. Clutterbuck and other writers of eminence have found salivation to be the most effectual means we have for the cure of the paralysis of the wrists produced by the poisonous influence of lead. The nitrate of silver has also been used with success in paralysis from this cause. We may commence with half a grain three times daily, and gradually increase it to the extent of five or six grains in the twenty-four hours. When it causes purging, which in this affection it appears to be apt to do, it should be given in union with a small dose of opium.*

During the treatment of this variety of colic, the patient should take freely of fat animal broths, or chicken-water; and it is particularly important that he should avoid drinking cold water or stimulating fluids. To prevent the recurrence of the disease, it is of course absolutely necessary to avoid the influence of its remote cause; and therefore to relinquish the employments which render the exposure to this cause unavoidable, such as painting, glazing, manufacturing white lead, &c. The utmost care is necessary not to take crude and acid articles of food and drink, and to avoid the influence of a humid and cold atmosphere for a considerable time after recovering from an attack of the disease. The free use of fat and oily articles of diet is said to counteract, to a very considerable extent, the poisonous influence of lead. Fat pork, and the daily use of two or three ounces of sweet oil in the morning on an empty stomach, will often protect the system a long time from the injurious effects of this poison; and those who are employed in lead mines, and in the manufacture of the preparations of this metal, are fully aware of the protecting influence of such articles of food, and generally use them very freely.

ILEUS.

Ileus consists in an introsusception, invagination, or inversion of one portion of the intestinal tube into another. This unnatural position of parts induces irritation, which eventuates in spasmodic contraction of the muscular coat of the intestine, thus constricting the caliber of the enclosed gut, and preventing the regular passage of the fæces. The invagination commonly

* Dr. Roberts. Med. Transactions, vol. v. art. 5.

occurs at the termination of the small in the large intestines, the ileum and cœcum being enveloped within the colon. It however frequently happens in other parts of the intestinal tube, and it is by no means rare to see invaginations in several places in the same individual. Invaginations of the small intestines frequently take place in children, and occasion but slight and temporary inconvenience.

Causes.—This disease may be produced by every thing which may tend to excite irritation or spasmodic action in the stomach and bowels. Among these may be enumerated irritating and drastic cathartics, emetics, or indigestible substances taken into the stomach—such as coins, glass, cherry or peach-stones, and unripe fruit. Ileus is also occasionally produced by hernia, by wounds, or other injuries of the abdomen, by cold externally or internally applied, by intestinal calculi, by organic derangements of the alimentary canal, or by any thing which either directly or indirectly tends to contract or close the intestinal tube. It is highly probable, that in the painful struggles and general convulsions which precede death, many cases of this disease are produced.

Symptoms.—The indications of an attack of ileus are in some instances very insidious, and the disease may have continued months or perhaps years unsuspected. It usually, however, comes on suddenly and without any premonition, by violent, spasmodic, and paroxysmal pains in the abdomen, eructations of wind, jactitation, frequent and ineffectual attempts at stool, distention of the abdomen, and all the symptoms of spasmodic colic. The bowels are constipated, although a discharge of the large intestines below the invaginated part may be accomplished by means of enemata or by nature. The stools are usually mixed with, or consist entirely of coagulated blood. Upon examination of the abdomen, a hard, irregular, convoluted tumour may often be discovered, showing the situation, and perhaps the extent of the invagination. To the symptoms detailed, succeed obstinate constipation, hiccup, vomiting at first of the contents of the stomach, and ultimately of stercoraceous matter. The symptoms of inflammation may supervene upon those of spasm, in which case the disease will become greatly aggravated, and the life of the patient put in imminent danger. Should the spasmodic constriction and inflammation of the intestine be sufficiently severe and continued for any great length of time, gangrene and mortification of the bowel will be the result, which will be indicated and accompanied by cessation of pain, prostration of strength, and all the distinguishing and alarming symptoms of mortification. The invaginated portion, however, becoming gangrenous, sometimes sloughs off, and cases of recovery in this manner have been recorded. Twenty years ago I saw a case of this kind, in which

by the efforts of nature adhesions formed, several inches of the bowel sloughed off and passed away by stool, producing immediate relief and a rapid recovery. Nature may also accomplish a favourable termination of the disease by overcoming the constriction, and procuring the disengagement of the enclosed intestine.

Diagnosis.—The diagnosis of this disease is exceedingly difficult and uncertain. Attacking suddenly, with great violence, and without any premonitory symptoms, it is apt to be mistaken for spasmodic colic, colica pictonum, cholera morbus, or tympanitis. On the other hand, insidious as it frequently is, and accompanied with symptoms uncertain, and common to some other complaints, its very existence is often unsuspected, and it may easily be mistaken for other diseases. So uncertain are the diagnostic symptoms, that John Hunter, who paid particular attention to this subject, has declared that its existence could never be satisfactorily ascertained during life. Violent and spasmodic pains occurring in paroxysms, however, with long continued and obstinate constipation; fecal vomiting; distention of the abdomen; with a hard, convoluted tumour about the arch of the colon, will indicate its presence with some considerable degree of certainty.

Prognosis.—Ileus is always dangerous. Occurring in robust and plethoric habits, inflammation, followed by gangrene and mortification, is very apt to ensue. In delicate and irritable habits the spasmodic constriction is carried to a great extent, and is productive of effects equally dangerous. The spasmodic or inflammatory action may, however, in some instances be overcome, and the disease relieved. The skill of the physician, however ably and scientifically directed, will generally fail, in which case nature sometimes comes to our aid, and brings about results as unexpected as they are salutary.

Pathology.—It has been said that ileus is a spasmodic disease, and that inflammation, gangrene, and mortification are the consequences of the pre-existent spasm. In a late publication upon "the diseases of the stomach and bowels," Abercrombie has advanced a new theory upon this subject. Having observed in a great number of post mortem examinations, that distention of the bowel above the invagination was a uniform occurrence, he conceives the distention to be a paralytic affection of the intestine, in consequence of which the fecal matter cannot be propelled onward through the canal. The introsusception has, according to this theory, nothing to do with the disease. Ingenious as this theory undoubtedly is, facts are wanting to support its claims to our notice. A careful review of this disease will convince us that it is entirely inadequate to account for the origin, symptoms, causes, effects, and treatment of this disease. The spasmodic nature of ileus appears so

plain, that a formal vindication of its claims is unnecessary. We have seen that ileus is produced by all the causes which give rise to spasmodic diseases generally—that it is indicated by symptoms peculiar to this class of affections, and we shall soon observe that every plan of treatment which has been pursued with any prospect of success has been based upon the proposition of the spasmodic nature of ileus. The remedies which Abercrombie himself proposes are such as are eminently calculated to allay spasmodic action, without any view to the paralytic affection of the bowel.

Dissections exhibit very clearly the pathology of ileus. The disease appears to expend its whole force upon the intestines about the introsusception. This introsusception is very satisfactorily presented to our view. One portion of the bowel is drawn within another, and is there firmly constricted—so much so, that in some instances considerable difficulty is experienced in extricating it. Surrounding this invagination, the marks of inflammation are every where apparent. In some parts, and particularly at the constricted point, gangrene and mortification will generally be detected. Above the introsusception the intestine will be found distended by fæces or flatus, which had been presented from passing through the constricted portion of the tube. Below, the intestine is generally in a state of emptiness and contraction. In some cases several invaginations will be seen in different parts of the fecal tube—each one presenting to a greater or less degree the peculiarities just described. In the majority of cases the invagination will be found at the arch of the colon, or at the termination of the small into the large intestines. The invagination, in the great majority of cases, will be observed to take place from below upwards, although the opposite occasionally obtains.

Treatment.—The leading indication in the treatment of ileus is to alleviate, and if possible, overcome the spasmodic action of the muscular coat of the intestines, and thus prevent inflammation, relieve the introsusception, and open the bowels. At the very onset of the attack we should endeavour, if possible, to ascertain the cause, and if hernia be detected, it should immediately be reduced. Cases of ileus have terminated fatally from a neglect of this precaution.

Believing the disease to be spasmodic in its nature, and prone to become inflammatory in its progress, we should keep our attention steadily directed to the pulse, remembering that in this case, as well as in all other diseases of the intestines, it very frequently betrays us into error. The least tendency to inflammatory action should be combated by the free use of the lancet. Keeping in mind the rapidity of the progress, and the extreme danger of this disease, we should, without hesitation or delay, abstract blood largely. This alone will in many

instances have a decided effect in subduing spasm and preventing the occurrence of inflammation. Great advantage may also be derived from topical bleeding by means of cups or leeches applied to the abdomen. Blood-letting having been premised, we may have recourse to antispasmodics with the happiest effects. Of these, opium is decidedly the best. To obtain its most beneficial effects, the system should be put completely under its impression, by the administration of large and repeated doses. Under the influence of opium, spasm will be frequently allayed, the introsusception overcome, and the bowels evacuated. We may, at this period, with great prospects of success, interpose the use of purgatives. In the employment of these remedies, we should select such as are mild in their operation and gentle in their effects. Calomel will be found to possess a superiority over every other cathartic. Given in doses of ten grains, alone or with one or two grains of opium, it will frequently be retained on the stomach, when every thing else would be rejected. Castor oil in small and repeated doses, will frequently be retained, and may prove a useful adjunct.

Much reliance is to be placed in enemata. Acting directly upon the diseased intestine, they will often display effects highly salutary. A great variety of enemata have been recommended, all of which may, in particular instances, have had a beneficial influence. Copious injections of warm water will sometimes prove an important auxiliary, by relaxing the spasm, distending the bowels, and perhaps overcoming the constriction. Dr. Wiltbank related to me a case of ileus, in which the only remedy that had any influence in overcoming the disease, was a large enema of warm water administered by means of the stomach-tube introduced its whole length per anum. This remedy is worthy of further trial. That the administration of enemata by means of the stomach-tube may exert a powerful action in overcoming an introsusception, appears very reasonable. Cold water administered in a similar manner may also have a salutary effect. Tobacco is a remedy of pervading influence upon the abdominal viscera, and evinces such decided relaxing properties upon the muscular system generally, that the most happy effects may be anticipated from its employment. Great caution is requisite in its use: beginning with a weak infusion, the strength may be gradually increased, until the system is under its full impression. Of the terebinthinate enema, I know nothing from experience; but from the adaptation of turpentine to many of the diseases of the bowels, I am inclined to think favourably of its powers, more particularly in the sinking stages of the disease.

These remedies failing, we should next have recourse to blisters. These are particularly efficacious in cases attended with

inflammatory action. They should be sufficiently large to cover the whole abdomen.

Cold affusions to the abdomen and legs has long been a favourite remedy, and we are led to believe may in some instances have proved serviceable. Crude mercury has been used in introsusceptions from time immemorial, and is still a favourite practice in England. Abercrombie recommends it in this disease in doses of one or two pounds. Whether it has ever proved beneficial is extremely doubtful. John Hunter's practice in ileus consisted in the administration of purgatives when the enveloped gut was drawn upwards, and of emetics when it was drawn downwards. But the difficulty of this plan of treatment lies in the impossibility of determining, during the life of the patient, whether the constricted gut is drawn within the upper or lower portion of the intestine.

All our remedies will however occasionally fail, and the system will sink under the combined effects of spasmodic and inflammatory action. In this case stimulants are indispensable. In the administration of stimulants, it is desirable to select such as possess a purgative property. The tincture of rhubarb and the wine or tincture of aloes will be found to possess these qualities in an eminent degree.

Taking into consideration the difficulty experienced in affording relief, and the imminent danger attending an attack of ileus, surgeons have within a few years advised the Cæsarean operation. This operation, however, has been performed but in one instance. Dr. Fuschstius* relates a case, in which after every remedy had proved unavailing, this operation was performed, the invaginated intestine drawn out, and a perfect cure obtained. Further trials of its efficacy in the relief of this disease will be required, before we should be justified in recommending it as a general remedy.

I have only to remark while upon this subject, that we should resolutely persevere in the use of every remedy that our skill can devise, knowing that recovery is sometimes effected at a very late period, and when to all appearance no human effort could restore life.

CONSTIPATION.

Constipation is a term of relative import. For the due preservation of health and comfort, it may be laid down as a general rule, that a daily evacuation of the bowels is indispensably necessary. There are, however, exceptions to this rule.

* Journal der Heilkunde, Feb. 1826.

It is by no means rare to see individuals who have a natural stool but once or twice in a week; and cases have been reported in which weeks, months, and, in one instance, seven years elapsed without the appearance of a stool. These cases, however, are extraordinary, and should not affect the rule that the bowels should be opened every day.

Constipation of the bowels is generally referrible to sluggishness of the peristaltic action of the intestines, or to torpor of the liver. Good ascribes it, in some instances, to excessive action of the intestinal absorbents, by which the fluid portion of the fæces is too rapidly removed, and they are left dry, scybalous, and difficult to be evacuated.

The symptoms attending constipation of the bowels are highly disagreeable. The breath is offensive; the mouth dry and out of taste; the tongue furred, more particularly in the morning, and at its root; there is loss of appetite, nausea, headach, flatulence, and distension of the abdomen. The continuance of this affection is apt to induce indigestion, varices in the lower limbs, and piles.

Causes—Costiveness may be produced by an astringent diet, want of fresh air, and active exercise, confinement to any particular posture of the body, neglect of the calls of nature, stricture of the bowels, and other organic disorders of the intestines and liver, and pressure of the uterus during pregnancy.

Constipation is often a constitutional disease, or it may become habitual from the nature and continuance of the causes producing it. The studious, the sedentary, the indolent, and all whose occupation confines them within doors, and especially those who are under the necessity of remaining long in any particular posture of the body, are peculiarly obnoxious to this affection. Females, from their want of active exercise in the open air, and during the period of pregnancy from the pressure of the impregnated uterus upon the bowels, are particularly subject to constipation.

Treatment.—In attempting the relief of constipation of the bowels, it should be borne in mind, that simple and dietetic means will, in many instances, be sufficient to accomplish a complete cure. Ripe fruits, such as apples, peaches, pears, prunes, figs, gooseberries, strawberries, possess aperient properties sufficient, in many instances, to overcome the most obstinate habitual constipation. Boiled vegetables are also proper articles of diet. The brown bread made of unbolted flour is a favourite remedy in this disease, and rarely fails in procuring regular and natural stools. All stimulating and astringent articles, such as cinnamon, nutmegs, &c. are injurious, and should be sedulously avoided. Meats should be eaten sparingly and under-done: beef, mutton, fowls, and the various kinds of game are the most proper animal food.

Exercise is also an important remedy in this affection. It should be regular, active, and in the open air; walking or riding on horseback will, in general, prove most salutary.

Above all, however, we should never lose sight of the necessity of a regular attempt at stool. This will frequently overcome attacks of this disease which have resisted every other means. An attempt at evacuation should be made daily at a certain hour, and although for a time we may be disappointed, yet perseverance will ultimately overcome the habit and relieve the disease.

Should the treatment recommended fail, or the urgency of the case admit of no delay, we must, without loss of time, administer purgatives. In the selection of these remedies, such should be preferred as operate mildly and effectually. The liver being usually implicated in the disease, the use of mercury in some form cannot be dispensed with. Commencing with calomel alone, or in combination with rhubarb, aloes, jalap, or some other active cathartic, it should be continued until the bowels are freely evacuated. The operation of the cathartics may be greatly aided by the administration of an enema. Injections are indeed an important remedy in this disease, and have, in this country and in England, been too much neglected. They should be simple, emollient, and frequently repeated.

The bowels having been evacuated, should be kept in a soluble state by the use of laxatives. The remedy I have found most effectual for this purpose is a combination of the blue pill, aloes, and tartarized antimony,* which may be repeated as often as occasion requires. Inspissated ox bile, in pills of five grains each, has been highly extolled, and may perhaps, in some instances, have proved serviceable. Powdered charcoal has of late years been much used in this disease; care should be taken in its administration, as it, like magnesia, is apt to form concretions in the bowels, and thus increase the disease it was intended to relieve. When it is employed, it should be in combination with some more active cathartic. Castor oil with a few drops of the oil of turpentine, will often display very happy effects. Good quotes two very obstinate cases of constipation, in which affusions of cold water over the legs and pubes produced an almost immediate evacuation of the bowels.

Should these remedies fail, and the habit become confirmed, the blue pill should be given every night for two or three weeks, and purged off on each succeeding morning by rhubarb. This will frequently succeed after every thing else has failed. If

* R. Massa ex. hydrarg. ℈ij.
Pulv. aloes grs. xij.
Antim. tart. gr. j. M. ft. Massa in pillul. No. xij. divid., one of which is the dose.

it, however, prove inadequate to the relief of the disease, the mercury may be pushed to moderate ptyalism. This being accomplished, the disease will, in general, immediately give way, and a rapid cure be effected.

CHAPTER XXVI.

INTESTINAL WORMS.

The origin of intestinal worms is enveloped in great obscurity. In whatever light this interesting subject is examined, insuperable difficulties present themselves to the mind. There are but two possible modes in which worms may be produced in the alimentary canal. They are either developed from *ovula* received into the stomach and bowels, from without, along with the food and drink—or they are formed in the intestines, independently of seminal matter, or ova generated by similar animals, by new chemical combinations, or what is technically called *spontaneous generation*. It does not comport with the design of this work to enter into a detail of the various arguments that have been advanced, both for and against these views of the generation of intestinal worms; but it may be observed, that the supposition of their origin from ova received into the alimentary canal, necessarily presumes the existence of similar worms out of the body, by which these ova are generated. This, however, is not confirmed by accurate observation; for, although Linneus, Gmelin, and a few others, assert that both *tænia* and *ascarides* have been found in stagnant waters and in marshes; the ablest helminthologists of the present day, affirm that these worms differ very distinctly both in structure and character from those which are found in the intestines of animals. It must be observed, moreover, that earth worms of this kind are of exceedingly rare occurrence, and that they have been met with only in particular districts and localities—a circumstance which strongly discountenances the supposition that they furnish the semina of intestinal worms so common in man and in the inferior animals in every country and situation. The fact, too, that all intestinal worms almost immediately die when removed out of the body and exposed to the air, or placed in water, militates against the doctrine that they are the offspring of worms, whose natural habitation is out of the animal body; and finally, it has been satisfactorily ascertained that earth worms and such as live in water do not change their forms or character when accidentally received into the intestinal canal. Another circumstance directly opposed

to the opinion that the seminal rudiments of intestinal worms are generated by worms out of the body, and conveyed in some way or other into the stomach and bowels of animals, is the fact that intestinal worms have been repeatedly found in the bowels of new-born fœtuses. Kerkringius asserts, that he discovered lumbrici in the stomach of a seven-months fœtus; and in another instance he found a great number of small worms in the bowels of an infant soon after birth. Pallas states, that Brendel found a tape-worm in the bowels of a new born fœtus; and Heim, according to the testimony of Bloch, met with a similar instance. Rudolphi mentions a case which occurred to the celebrated Blumenbach, in which tæniæ were found in the intestines of a recently born pup.*

If this view of the generation of intestinal worms be rejected, and to me it appears to be altogether untenable, we are obliged either to confess our total ignorance concerning this mysterious process, which would perhaps be the most prudent, or to resort to the doctrine of *spontaneous generation* to account for the origin of these parasitic animals. I cannot here enter into the arguments which may be adduced in support of this doctrine; but it appears to me that an erroneous sentiment of religion has here repressed the spirit of genuine philosophy—in other words, that prejudice, founded on a narrow view of the wise and mysterious scheme of providence, has not permitted the majority of competent minds to view this interesting subject of research in its true light. The ancient dogma, *omnia ex ova*, may, I think, be rightfully questioned. When experience and sound reason lead us to a conclusion in philosophy, we may safely abide by it, although it may at first sight appear to run counter to the cherished sentiments, drawn from the highest source of wisdom and goodness.

Of the causes that favour the production of intestinal worms.—However uncertain our notions may be, in relation to the origin of intestinal worms, observation has made us acquainted with the principal circumstances which favour their generation and increase. Among the remote causes that appear particularly to favour the production of intestinal worms, are—a sedentary and inactive course of life; habitual exposure to a humid atmosphere; the abundant use of fat, and farinaceous articles of diet, and of fresh milk; the use of more food than the stomach can readily digest, or than is necessary to maintain the health and vigour of the system. Dr. Bremser asserts, that in general all articles of food which furnish a very abundant supply of nutrient elements, when habitually taken in larger portions than the ordinary wants of the system require, are particularly calculated to favour the generation of worms

* Dr. Bremser.—Ueber Lebende Würmer in Lebenden Menschen, p. 16.

in the alimentary canal. Some writers have mentioned the free use of sugar among the causes particularly favourable to the production of intestinal worms—but this has been denied by others, whose opportunities of forming a correct judgment on this point were considerable. From the occasional epidemic prevalence of verminous diseases, it would seem that there are peculiar atmospheric constitutions, or aerial causes which favour the generation of intestinal worms. The occurrence of epidemics of this kind has, indeed, been denied and even ridiculed by some; but if we are to place any reliance on the concurrent testimonies of some eminent writers; the fact of such epidemics having occurred, must be admitted. Marie has given the history of a very remarkable instance of this kind, which occurred at Ravenna and the surrounding district. Bloch, too, has given an account of an epidemic worm-fever. That verminous affections are vastly more common in some countries or districts than in others, is unquestionable. It is said that in Savoy and Chambrey intestinal worms in every class of society are remarkably common, (Daquin, Bremser) and the same observation has been repeatedly made of Holland and Switzerland. Bremser thinks that the abundant use of milk and cheese in the latter country is probably the principal cause of the great prevalence of worm affections among its inhabitants. The occurrence of the tape-worm is particularly common both in Switzerland and in Holland; and it is especially remarkable, that in the former country, the *bothriocephalus latus*, (tænia lata) is by far the most common; whilst in Germany, the greater part of France, in Italy, and even in the Tyrol, the *tænia solium* (t. cucurbitina) is almost the only species of tape-worm met with. Rudolphi asserts, that in Sweden the *bothriocephalus latus* occurs very rarely, whilst the *tænia solium* is by no means uncommon.

Species of intestinal worms.—There are five distinct species of intestinal worms, viz:

1. *The tricocephalus dispar*—(*trichuris—tricocephalus hominis—ascaris trichuria.*)—This worm, called by the English "*the long thread-worm.*" is from an inch and a half to about two inches in length. About two-thirds of its length is almost as thin as a horse-hair, the remaining and posterior part being considerably thicker, terminating in a rounded or blunt extremity. The thin part is transversely striated; and the alimentary canal may be seen, by means of a lens, running from its thinner extremity in a direct line through the centre, into the thick posterior portion, where it assumes a flat and spiral form. These worms are seldom numerous, and are principally found in the cœcum.

2. *Ascaris vermicularis.*—(Oxyuris vermicularis—fusaria

vermicularis—maw or thread-worm.)—This is a very small white worm—the male being not above two lines in length, with a rounded or blunt extremity anteriorly, tapering to a point posteriorly. The female is considerably larger, being from four to five lines in length, terminating in an extremely fine extremity posteriorly, resembling the point of the finest needle. These worms are found only in the large intestines, and principally in the lower part of the rectum, where they are often collected in almost countless numbers.

3. *Ascaris lumbricoides.*—(Fusaria lumbricoides—lumbricus teres.)—These worms are from two or three to ten or twelve inches in length, round, of a yellowish-white or brownish-red colour, of nearly a uniform thickness, except at the extremities, which taper to a blunt point. They are from two to three lines in thickness. The head may be distinguished by a circular depression within a line of one of the extremities, terminating in three small tuberosities or valves, which the worm has the power of opening and closing. When they are opened a very minute, patulous projection may be seen, which constitutes the mouth of the worm. A very small groove passes longitudinally, from one extremity to the other, on both sides. The alimentary canal terminates in a transverse depression on the under surface near the posterior extremity. The male is smaller than the female, and may be distinguished by its shortly curved caudal extremity. In some instances the organs of generation are conspicuous—consisting of two small cylindrical projections in the curved part of the tail. These worms inhabit the small intestines, and occasionally ascend into the stomach.

4. *Tænia lata.*—(Bothriocephalus latus—tænia membranacea—t. vulgaris.)—This worm often acquires a very great length—from thirty to forty feet and more. It is from four to ten lines in breadth, flat, white, and composed of a series of concatenated joints, resembling a piece of white tape. The head is armed with two processes, by which the worm attaches itself to the intestines. It inhabits the upper portion of the bowels and the stomach.

5. *Tænia solium.*—(Tænia cucurbitina—t. osculis marginalibus.)—This worm is rarely if ever voided whole. It is passed off in pieces of a greater or less number of joints, or in single joints bearing a considerable resemblance to the seeds of *gourd*. Pieces, however, upwards of twenty feet in length have been discharged, although generally not more than three or four joints pass off together. The anterior part tapers off into a very fine thread-like extremity, the head being extremely small and furnished at its sides with four small apertures (*ascula*). This is the most common species of tape-worm, and like the tænia lata inhabits the stomach and small intestines.

Symptoms.—The symptoms which usually arise from verminous irritation, and from the presence of which we may presume the existence of worms in the alimentary canal, are—countenance pale, lead-coloured, with occasional transient flushes; eyes dull; pupils dilated, with a bluish semicircle around the lower eyelids; tickling in the nose; tumid upper lip; occasional headach, and humming in the ears; copious secretion of saliva; tongue slimy or furred; breath foul; variable appetite—being sometimes voracious—at others wholly gone; transient pains in the stomach; occasional nausea and vomiting; pains in the abdomen—particularly about the umbilical region; frequent slimy stools, or costiveness; urine turbid, yellowish, or milky; abdomen tumid and hard, with emaciation of the other parts of the body; lassitude; irritability of temper. None of these symptoms, however, are certain indications of the existence of worms in the bowels—the only certain indication being the appearance of them in the evacuations from the bowels or stomach.

The opinion which has been expressed by some writers, that worms are harmless inmates of the intestinal canal, is most assuredly not founded on correct observation. Without doubt, many of the affections usually ascribed to worms arise from other causes; and it is quite probable, that that peculiar condition of the alimentary canal which favours the production of worms, may be frequently mainly concerned in giving rise to the various general affections which attend the presence of worms in the stomach and bowels. That verminous irritation is, however, sometimes the direct and exclusive exciting cause of severe and dangerous affections, is unquestionable. Chorea, epilepsy, hydrocephalus, emaciation, convulsions, mania, paralysis, fevers, dropsy, and a vast variety of anomalous disorders are sometimes the immediate consequence of irritation from worms in the bowels, and occasionally speedily disappear after the expulsion of the worms. Esquirol states, that he has known eleven persons cured of mania by the expulsion of a large number of lumbrici with anthelmintic remedies.

Treatment.—In prescribing for the removal or destruction of intestinal worms, it is of considerable consequence to confine the patient to a spare and liquid diet, and to exhibit two or three mild purgatives a few days previous to the exhibition of the proper anthelmintic remedies. With these preparatory measures, the ordinary vermifuge remedies will not disappoint us so often as without them. My own plan of management for the expulsion of the long round worm (*lumbricoid*), is to put the patient on a liquid diet, and to order him a small dose of Epsom salts every morning for three or four days. On the fourth morning I direct a decoction of the root of spigelia, in the proportion of an ounce of the root to a pint of water, boiled

down to half a pint. This being sweetened, is to be drunk in the course of three or four hours, by a child of from five to ten years old, commencing in the morning after having taken a little milk and water into the stomach. As soon as the whole of the decoction is taken, an active dose of calomel and jalap is to be administered, or a dose of castor oil and turpentine, in the proportion of half an ounce of the former to two drachms of the latter, given in doses corresponding to the age of the patient. I have rarely failed, by this plan, to procure the discharge of worms, where they existed in the bowels. A vast number of remedies and modes of treatment have been recommended for the expulsion of this species of intestinal worms. Bremser speaks very highly of the vermifuge powers of the following electuary.* A tea-spoonful is to be given to a child every morning and evening for six or seven days. I have used this electuary in four or five cases with complete success. It should not be given to the extent of producing frequent and watery evacuations. I have found it to do most good when it procured three or four consistent stools daily. Rudolphi asserts, that the anthelmintic oil of Chabert (*oleum empyreumaticum Chaberti*) is decidedly the most efficacious vermifuge we possess; and both Bremser and Brera have added their testimony in favour of its usefulness in this respect.† Fifteen or twenty drops may be taken three or four times daily by children from two to seven years old. Small doses of calomel with the powdered roots of spigelia and valerian may also be resorted to with a prospect of advantage. There is danger, however, of producing ptyalism from giving calomel in this way—more especially as it is generally necessary to continue its use for several days before its anthelmintic powers can be properly obtained. The most efficacious vermifuge remedies for the expulsion or destruction of the round worms, besides the articles already mentioned, are—chenapodium anthelminticum; sem. santonic; tin filings; garlic; conferva helminthocordon; spirits of turpentine; geoffrea surinamensis; the green rind of unripe walnut; and camphor.

* R. Sem. santon. sive tanacet. rudet. contus ℥ss.
Pulv. rad. valerian. ℥ii.
—— —— jalapæ ℥ss.—℈ii.
Sulphat. potassæ ℥iss.—℥ii.
Oxymel. scillit q. s. ut fiat electuar. M.

† This oil is made by mixing one part of the fetid spirits of hartshorn with three parts of the spirits of turpentine, and suffering them to digest for four days. The mixture is then to be put into a glass retort, and distilled in a sand-bath until three-fourths of the whole have passed over into the receiver. This is to be kept for use in small and well-closed vials.

To prevent the rapid reproduction of worms, after they have been expelled or destroyed by anthelmintics, recourse must be had to tonics—particularly chalybeates, in conjunction with minute portions of aloes, and a plain and abstemious diet. A strong decoction of the helminthocordon has appeared to me not only very valuable as an anthelmintic, but particularly also to remove that debilitated and disordered state of the alimentary canal which favours the production of worms. An ounce of this marine vegetable, with a drachm of valerian, should be boiled in a pint of water down to one gill. Of this a tea-spoonful may be given every morning, noon, and evening, with peculiar advantage to children labouring under verminous affections. I have in several instances known the use of this decoction to restore perfect health to children who were supposed to labour under verminous irritation, without any appearance of worms in the evacuations. It has appeared to me particularly beneficial in cases attended with the usual symptoms of worms, connected with want of appetite and mucous diarrhœa arising from mere debility of the digestive organs, and vitiated secretions in the bowels.

Ascarides.—These little worms are generally extremely annoying. During the day they seldom give rise to much inconvenience; but in the evening, and particularly soon after lying down, they usually occasion a very distressing, and, indeed, an almost insupportable itching and titilation in the lower part of the rectum and the anus. So extremely distressing is the sensation which they cause in these parts, that nervous children are sometimes thrown into convulsions by it. In females these worms sometimes pass into the vagina, and give rise to very great uneasiness. Dr. Bremser states, that he has known an instance in which symptoms of nymphomania were excited by the irritation of ascarides which had made their way into the vagina. They are generally most troublesome during damp weather.

The removal of ascarides is often attended with great difficulty, for although the inconveniences which they create may be removed for a time, they almost always recur again and again in those who are once infested with these worms. From the location of these worms in the lower part of rectum, little or no advantage can be obtained from the use of anthelmintics administered by the mouth; and even active purgatives seldom evacuate them sufficiently. Aloes, however, from its decided tendency to act on the lower portion of the bowels, will occasionally expel them in great quantities, particularly when assisted with proper enemata. My usual mode of proceeding for the expulsion of these troublesome worms, is to prescribe three or four aloetic purgatives every second day, together with two or three enemata composed of a mixture of lime-water and

milk in equal proportions daily. Injections of a solution of aloes, or of infusions of any of the above named vegetable anthelmintics, will generally bring off an abundance of these annoying little worms. I have, in a few instances, brought them away in great quantities, by injections composed of spirits of turpentine mixed with milk, in the proportion of a tea-spoonful of the former to a gill of the latter. The introduction into the rectum of a bougie smeared over with mercurial ointment, has been employed with success for the destruction of ascarides; and Nil Rosen speaks very favourably of injections composed of a drachm of refined sugar dissolved in warm milk. When ascarides have passed into the vagina, injections of cold water with a small portion of vinegar, is, according to the experience of Dr. Bremser, the best remedy we possess. Dr. Van Vest asserts, that flowers of sulphur taken in the morning on an empty stomach, is one of the most efficacious remedies for the destruction and expulsion of these worms.

Tape-Worm.—For the expulsion of the tape-worm, a very great variety of remedies and modes of treatment have been recommended. The anthelmintics that have been found most effectual against this species of intestinal worms, are—polypodium filix; spirits of turpentine; tin; valerian; the bark of the pomegranate root; and the empyreumatic oil of Chabert. Whatever mode of treatment be adopted, it is always of much consequence to prepare the patient by proper diet and laxatives before the proper vermifuges are given. A spare and liquid diet, with the daily use of small doses of saline purgatives for four or five days, will greatly increase the chances of procuring the expulsion of the worm, by the use of anthelmintic or active cathartic remedies. The following is the substance of some of the most celebrated methods of treatment recommended for the removal or destruction of tænia.

Alston's method.—On the first day the patient is actively purged with an infusion of senna and manna. On the following morning an ounce of pure tin filings, mixed with common syrup, is to be taken (by an adult;) and on the second and third morning half an ounce of tin filings are administered, which is followed on the fourth morning, by an active dose of senna and manna. Pallas speaks in very favourable terms of this mode of management, and assures us that he has several times succeeded completely in effecting the expulsion of tænia with it. Bremer also has employed it with success in a few cases.

Dessault's method, consists in the employment of mercurial frictions on the abdomen, followed by drastic mecurial purges.

Herrenschwand's method.—A drachm of the powdered *male fern root* is to be taken morning and evening on an empty stomach, for two days in succession. On the morning of the third

day the following purgative must be taken.* Three hours after this dose is swallowed, the patient must take an ounce of castor oil, and this dose must be repeated in an hour; if in three hours after the second dose of oil the worm has not been expelled, a third dose of it is to be taken, and should all these fail in procuring the expulsion of the worm, an injection of three ounces of castor oil in warm milk and water should be administered in the evening.

Hufeland's method.—A cup of a decoction of garlic in milk is to be taken every morning on an empty stomach; and a table-spoonful of castor oil every morning, noon, and evening, with half an ounce of tin filings daily, and frictions on the abdomen, with petroleum twice every day. The patient is to eat salted food. This method must be pursued for several weeks, or until the head of the worm is expelled.

Nouffer's method.—This mode of treatment was at one time in high esteem; and many very respectable names might be mentioned in testimony of its occasional efficacy for the expulsion of the tape-worm. In the evening the patient must take a bowl of panada for his supper; fifteen minutes afterwards a glass of wine with a biscuit; and if the bowels were not moved during the day, an enema composed of an infusion of mallows and a little common salt, with a few ounces of sweet oil, is to be administered. Early on the following morning, eight or nine hours after the panada was taken on the preceding evening, the following powder is to be administered while the patient is yet in bed.† If this should be rejected by the stomach, a second dose must be taken. Two hours after this powder is swallowed, the following purgative bolus must be administered;‡ after which the patient should drink a few cups of green tea, and walk about in his chamber. As soon as the purge begins to operate, a cup of weak tea must be drank at short intervals, until the worm passes off. When this occurs, and not sooner, he may take a moderate portion of animal broth. If this course of management does not succeed in bringing off the whole of the worm, it should be repeated in the same manner as has just been described. This method will frequently succeed in expelling the *tænia bothriocephalus*; but it does not appear that it is capable of effecting the expulsion of the

* R. P. gambogiæ gr. xii.
Subcarbonat potassæ gr. xxx.
Sapo. venet. gr. ii.
Misce. To be taken at one dose.

† R. P. rad. filicis mar. ʒii.—ʒiii.—To be taken in six ounces of common water.

‡ R. Submuriat hydrarg. ——
P. scammon. aa. gr. x.
G. gambogia gr. vi.—vii.
M. ft. bolus.

t. solium. M. Odier recommends the use of three ounces of castor oil instead of the above purgative bolus; and it would appear from the observations of other writers, that this modification of Madam Nouffer's plan is advantageous.

M. Rathier speaks highly of the following composition as a remedy for the expulsion of tape-worm,*

Schmucker's method, which has been highly praised, consists in the employment of the seeds of sabadilla. The pods with the seeds are to be finely powdered; out of which boluses are to be made, containing five grains of the powder. Having purged the patient well with rhubarb or Glauber salts, on the following morning half a drachm of the sabadilla powder, rubbed up with an equal quantity of sugar, is to be taken. This generally causes vomiting. In an hour after this powder is taken, some barley-water or oat-meal gruel should be swallowed. On the next morning, another dose of the sabadilla powder must be administered, which will again excite vomiting. If no worms are discharged after this dose, the patient must take but fifteen grains of the powder on the following morning, but the same dose should be repeated in the evening; and the same doses are to be taken on the fourth day. On the fifth day a purge composed of thirty grains of powdered rhubarb with eight grains of rosin, must be taken. On the morning of the sixth day, three of the above named boluses must be swallowed, and the same number on going to bed. In this way the treatment must be continued for twelve, fifteen, or even twenty days; and Schmucker asserts, that when properly persevered in, it will seldom fail to effect the expulsion of the worm.

Bremser's method.—Mr. Bremser assures us that, by the following method of treatment, he has succeeded in more than five hundred instances in procuring the expulsion of the tænia solium. The cure is commenced by taking three times daily a tea-spoonful of the electuary already mentioned for the expulsion of the round worm. (Sem. cinæ; rad. valerian; p. jalap.; and tart. vitriol.) When the whole of the portion ordered in the formula is thus used, two tea-spoonfuls of Chabert's anthelmintic oil must be taken every morning and evening in a little water. If it occasions vertigo, as is sometimes the case, the dose should be diminished. After the patient has taken this oil about ten or twelve days, he must

* R.	Pulv. herb. saben.	gr. xx.
	Pulv. sem. ruth.	gr. xv.
	Submuriat hydrarg.	gr. x.
	Ol. distil. tanacet.	gr. xi.
	Syrup. folior. persicor.	g. s.
	Ft. mass. ex quo form. bol.	no. ii.

One of these boluses is to be taken in the morning, and the other in the evening.

take a purgative;* after which the use of the oil must be continued. In general it requires from four to five ounces of this oil before the cure is effected.

The *spirits of turpentine* has of late years been strongly recommended as a remedy for the expulsion of tape-worm. From two to three ounces of this article should be given at once, and followed in about two hours by a strong dose of castor oil. From the accounts which have been published, of the employment of this article as a vermifuge for tænia, there can be no doubt that it is well deserving of attention as a remedy for this purpose. I have known it to be used with complete success in one instance. In a late number of Hufeland's Journal, the following formula is highly recommended as a remedy against tape-worm.

R.	Tereb. venet.	℥i.
	Sapon. jalapin.	ʒss.
	Extract. hyoscyam.	gr. iv.
	Calomel	gr. viii.

M. Divid. in pil. pond. gr. ii. Take four every three hours—the patient taking nothing but very thin broth for his food.

If the worm is not expelled the first day, the use of the pills must be continued for three or four days. Dr. Wilde used this remedy with success in two cases; and an instance was successfully treated with it in the Polyclinic Institute of Berlin.†

Of all the remedies, however, that have been proposed for the expulsion of the tape-worm, the root of the pomgranate appears to be the most efficacious. Dr. Ruggia, a physician of Naples, has employed it with great success; and Dr. Mile informs us, that in his hands it has proved very effectual. I am informed by Dr. Mease of this city, that he has used it in one instance with entire success; and he has heard of other instances in which it effected a cure, in this country. It is somewhat singular that this valuable remedy should so long have been neglected by the profession; for it is only within a few years past that we have heard any thing concerning its active anthelmintic powers, although among the ancients it appears to have been a favourite and common remedy for this purpose. Celsus prescribed it for the expulsion of tænia;‡ and it is

* R. Rad. jalap. ℈i.
P. fol. sennæ ʒss.
P. sulph. sulph. potassæ ʒi.
M. Divide into three equal parts. Take one every hour.

† Hufeland's Journal. June, 1826.

‡ Si lati sunt, qua potui dari debet, in qua lupinum, aut cortex mori decoctus sit; aut cui adjectum sit contritum vel hyssopum vel piperis

strongly recommended by Ætius, as a most efficacious remedy for this purpose.*

Two ounces of the fresh root are to be sliced finely, and slowly simmered in a pint of water down to half a pint. Of this decoction one-third must be taken early in the morning on an empty stomach, and another third every two hours. If this does not expel the worm the same is to be repeated next day, and so on. The diet should be liquid, and an active purgative given after the third portion is taken.

CHAPTER XXVII.

HÆMORRHOIDS.

Piles.

Hæmorrhoids having of late years been considered as more especially belonging to the province of the surgeon, we need not wonder that they are now much too exclusively regarded as mere painful tumours of a local character, the cure of which should never be delayed. Dr. Gregory observes, that the hæmorrhoidal flux was formerly "believed to be a salutary provision of nature for the advantage of the constitution. The sudden suppression of it, therefore, was highly dreaded. These notions have passed away; and piles are now regarded as a painful and disagreeable complaint, arising in most cases from local causes, the cure of which should never be delayed." Upon this point, however, we may reasonably demur; for, without regarding this affection as "a special effort of the vis medicatrix naturæ," observation and experience have, I think, amply demonstrated the fact, that these tumours and the consequent effusion of blood, are in *many* cases the consequence of plethora of the portal vessels generally, attended with a particular sanguineous determination to the vessels of the lower

acetabulum, scammoniæ paulum. Vel etiam pridie, cum multum alium ederit, vomat. *Postero que die mali punici tenues radiculas colligat, quantum manu comprehendet, easque contusas in aquas tribus sextariis de coquet, donec tertia pars supersit; huic adjiciat nitri paulum et jejunus bibat.* Interpositis deinde tribus horis duas potiones sumat talis aquæ vel muriæ duræ huic adjectæ; tum desideat, subjecta calida aqua in pelve.—Celsus De Re Med. lib. iv. cap. xvii.—I doubt whether any treatment proposed by modern physicians, is better calculated to effect the expulsion of tænia than the one here recommended by Celsus.

* Tetral. iii. serm. i. c. 39, 40.

portion of the rectum, arising perhaps generally from constitutional causes, analogous to the sanguineous afflux to the uterus during the menstrual periods in females. The premonitory symptoms which usually precede the appearance of the hæmorrhoidal flux,—the *molimina hæmorrhoidalia*—strongly indicate a preternatural afflux to, and congestion in the vessels of the lower part of the abdomen; and I apprehend, the precept that the suppression of this hæmorrhage should "*never* be delayed," would, if it were generally followed, afford no very gratifying illustration of the supposed advancement of our science in relation to this subject. Without doubt, hæmorrhoidal tumours are sometimes the result also of mere local causes, and may be safely removed as soon as possible. But whether the original cause be local or general, we may well doubt the propriety of suppressing the discharge after it has become habitual.

A deranged state of the circulation and plethora of the abdominal viscera, and especially of the lower portion of the intestinal canal, is never absent in this affection, unless the piles arise wholly from local causes, and consist rather of an indurated or thickened state of the mucous membrane, than of vascular or varicose tumours. The veins of the rectum, in consequence of this state of the portal circulation, become dilated or varicose, or the blood is effused into the cellular membrane beneath the mucous membrane of the rectum, forming sanguineous tumours. "In consequence," says Montegre, "of various causes which are sometimes beyond our cognizance, sanguineous determinations occur, at certain periods, towards the lower part of the rectum. This, at first, gives rise only to a feeling of tension and weight in the pelvis and extremity of the rectum—which, as it is not attended with actual pain, is often scarcely noticed, and usually subsides in three or four days. After a longer or shorter lapse of time, these symptoms are renewed, which generally terminate in a discharge of florid blood, spread over but not mingled with the fæces. This blood issues by a kind of exhalation from the mucous membrane of the rectum, without any lesion or erasion in this tissue whatever. After these fluxionary movements have returned more or less frequently—sometimes after a few repetitions, tumours of greater or less size, and more or less painful, begin to make their appearance."*

As has already been intimated, there are two kinds of hæmorrhoidal tumours, viz: the vascular or varicose swellings just mentioned; and those firm, spongy tumours more commonly called piles, which arise from a thickened and condensed state of submucous cellular tissue. These two forms of the dis-

* Dictionaire des Sciences Medicales, art. Hæmorrhois.

ease may be readily distinguished from each other by the following characteristic circumstances. The former or varicose tumours are of a dark and bluish colour, soft and elastic to the touch, broader at the base than at the apex, rounded or somewhat hemispherical, and considerably lessened by gradual pressure with the fingers, though quickly returning to their usual size when the pressure is removed. They generally occur in irregular clusters, and often extend high up along the rectum.

The other variety of hæmorrhoidal tumours appears like small fleshy tubercles of a pale red or brownish colour, situated a short distance above the margin of the anus, or descending like pendulous excrescences from the rectum. They have a somewhat firm and spongy feel, "and when cut into, present a more or less compact surface, from which the blood oozes, leaving the texture pale and relaxed." When they are situated externally, they are paler and more elastic and transparent. These tumours frequently contain a small cavity in the centre, containing a fluid or coagulated blood. More commonly, however, no such cavity exists, the whole substance of the tumour being infiltrated with blood, becoming at last coagulated and dark.*

"The manner in which these hæmorrhoidal excrescences are formed, is in general pretty uniform. The patient is at first made sensible of its development by a peculiar pricking, stinging sensation, generally within or around the margin of the anus, and on applying the finger to the part it is felt slightly elevated, as if some newly formed substance were forcing its way to the surface. The increase of these tumours, when once they become permanent, does not take place in every direction; they elongate rather than expand, the body being usually of a *conical shape, and larger than the neck.* Sometimes more or less blood is exhaled from their surface; on other occasions a serous fluid only is exhaled, or they remain nearly dry; but in either case they generally disappear in a short time, and return again at an uncertain or irregular period, increasing in size, and becoming firmer in texture with each repetition." (Calvert.)

General symptoms and consequences of hæmorrhoids.—The approach of an attack of hæmorrhoids is frequently announced by various symptoms denoting a deranged state of the circulation. In most instances the patient experiences for several days before any manifestations of the local hæmorrhoidal affection, a sense of weight and pressure in the abdomen, with a peculiar feeling of uneasiness in the bowels, constipation, and a sensation of bearing down in the rectum or perineum, attend-

* Practical Treatise on Hæmorrhoids, &c. by George Calvert, page 35.

ed frequently with horripilation in the back and loins,* slight flatulent pains in the stomach and colon, scanty and high-coloured urine, pale countenance, with an occasional confused sensation in the head, general lassitude and heaviness of the extremities, an irritable and discontented state of the mind, anxiety and fulness in the epigastrium, a hard and contracted pulse, and a sense of anxiety and fulness in the epigastrium. In many cases an unusual desire for venereal enjoyment occurs, and strong erections, and even nocturnal pollutions are apt to take place ;† and the patient often experiences a troublesome itching in the glans penis, and occasionally slight swelling and tenderness of the prepuce and testicles, and even a blennorrhœal discharge from the urethra.‡

These symptoms are not in general continuous. They are apt to remit very considerably, or to disappear entirely for a short time, and then return again, more especially on committing any errors in diet—taking stimulating drinks, or making any unusual corporeal or mental exertions. They generally continue, in a greater or less degree, until the tumours either burst, and relieve the engorged vessels by a free discharge of blood, or until they begin to decline and disappear. In some cases, however, these *molimina hæmorrhoidalia* continue for some time, and then disappear again, without the occurrence of the local hæmorrhoidal affection.

The *local affections* which attend the actual presence of hæmorrhoidal tumours are sometimes extremely severe and distressing. In some instances the elongated fleshy tumours at last become inflamed, and give rise to severe pain—particularly during the expulsion of the fæces. When they are situated high up they are often forced down past the sphincter, and from the irritable condition of the parts, and the enlarged and exquisitely tender state of the tumours, they cannot be again returned. In this situation they give rise to continued and extreme suffering, and the inflammation will occasionally run so high as to cause suppuration and sloughing.

When the inflammation extends to the surrounding mucous membrane, it gives rise to a blennorrhœal discharge from the tumours and lower portion of the rectum—consisting of a thin acrid, and mucous secretion, which soils the patient's linen, and causes tenderness and excoriation about the anus. Sometimes the tumours break, leaving fissures, which, from the irritation caused by the motion of the parts, and the passage of indurated fæces, as well as the acrid secretions, are converted into very painful irritable ulcers. Montegre has class-

* Pinel. Nosograph. Philos. vol. ii.
† Lentin. Bertræg. zur Ausuebent Arzneiwiss, vol. ii. p. 265.
‡ Richter Specielle. Therapie. Bd. iii. p. 350.

ed the pains which attend hæmorrhoids under four heads. 1. The pains which arise from active inflammation, characterized by heat, tension, and throbbing in the part, varying from a moderate degree of these sensations to the most excruciating sufferings. 2. *Nervous pains*, characterized by the intermissions and the very sudden increase and diminution to which it is subject, as well as the considerable relief which is generally obtained by pressure. These pains do not appear to depend either on fissure or strangulation of the tumour, and often take place without any evident inflammation. Not unfrequently they supervene when the inflammation has subsided, and may continue with variations of intensity for several months, and occasionally much longer. (Montegre.)

The pain which usually attends fissures, or rhagades of the tumours, or edge of the anus, are distinguished by the following circumstances. On going to stool the patient experiences a slight stinging pain in a certain part of the rectum or anus. After the fæces are expelled the pain increases more or less rapidly in intensity, until it becomes excruciatingly severe—in which state it usually continues until "exhausted, the patient falls into a sound sleep, from which he awakes free from suffering." No further pain is experienced until the patient again goes to stool, when they are renewed in the same way as before.

Contraction of the anus is no uncommon consequence of habitual hæmorrhoids, and may arise—1. *From a number of tumours formed around the internal surface of the rectum*, a short distance above the anus, and which, when pressed down on going to stool, approximate each other, and diminish the passage so as to create much difficulty in voiding the fæces—more especially when they are hard. 2. *From induration of the cellular tissue*, near the extremity of the rectum, giving rise to a progressive decrease of the size of the passage, being in general unaccompanied with pain, except when the patient goes to stool, and the fæces are hard. 3. *From spasmodic constriction of the anus*.—This appears to occur almost exclusively in persons of a nervous and irritable temperament. When the patient goes to stool, the sphincter of the anus being irritated by the fæces, contracts spasmodically, and with such force, that extreme difficulty and pain occur in voiding the contents of the rectum, and any attempt to introduce the finger, with the view of examining into the state of the affected parts, is attended with the same difficulty and severity of pain. It is often wholly unconnected with inflammation or fissure. Sometimes *ulcers*, *abscesses*, and *fistulæ* are formed near the extremity of the rectum, terminating occasionally in fistula ani.

Among the most common consequences of this affection is a kind of tenesmus, with protrusion of the inner tunic of the rec-

tum, so as to form a prominent and extremely sensitive ring around the anus—particularly after each attempt to expel the fæces. The tenesmus seems, in part, to be caused by the afflux of blood to the affected parts, and also by the impressions of the fæces upon the irritable mucous membrane of the lower part of the rectum, by which a frequent desire to stool is created, which being repeatedly assisted by ineffectual efforts to evacuate the fæces, gives rise to permanent induration, scirrhus, and even cancer of the rectum. (Montegre.)

Causes.—The causes of hæmorrhoids may be classed under two heads—namely, *general* and *local*. Among the general causes some are evidently simply *predisposing;* whilst others are more immediately concerned in exciting the hæmorrhoidal affection. There appears to be a peculiar physical temperament or abnormal condition of the body, which predisposes in an especial manner to the occurrence of this affection; and it would seem too that this hæmorrhoidal constitution is often manifestly hereditary. Richter supposes that this predisposition consists principally in an original inactivity of the circulation in the abdominal viscera, in consequence of which habitual congestion of the portal vessels is established. Be this as it may, it appears very evident that persons of a sanguino-bilious, or as it has also been termed, sanguino-melancholic habit of body, are most prone to hæmorrhoidal affections. Of the very great influence of *age* in favouring the occurrence of this disease there can be no doubt. Hæmorrhoids before the age of twenty-one years is far from being common, and when the disease does occur at or before this period of life, it is almost always the consequence of local causes, or of other diseases giving rise to congestion in the portal vessels. From thirty to fifty years of age is the period to which the appearance of these tumours is in a great measure confined. Those who remain free from the disease until they attain the age of fifty, seldom afterwards become more than very temporarily affected by it. Although pregnancy, and the final cessation of the menses, are well calculated the favour the occurrence of sanguineous congestion in the vessels of the abdominal viscera, and particularly of the rectum; yet, with the exception of the periods when these conditions are present, hæmorrhoidal affections appear to be much more common in males than in females.*

The influence of age in favouring the occurrence of this malady, may be accounted for from the natural tendency of the venous to predominate over the arterial system, as individuals advance in age—and especially, from the equally manifest tendency in middle and advanced age to a sluggish state of the circulation in, or perhaps an increased sanguineous determination

* Jahn. Klink. der Chron. Krank. Bd. iii. p. 453.

to the abdominal viscera, in consequence, probably, of a natural disposition, aided by the many causes which, as life advances, intervene, and tend to the same effect—such as the depressing passions, a more inactive course of life, debility of the digestive organs, and consequent torpor of the liver and bowels. I have stated that the predisposition to hæmorrhoids appears sometimes to be hereditary; but it is probably also, in many instances, acquired during infancy from improper dietetic management, and the habitual use of purgative medicines, so common, and in its ultimate tendency, so injurious a practice with nurses and mothers.

Habits of life tending to determine the blood to the abdominal viscera, or to cause congestion in the portal vessels, are by far the most common source of hæmorrhoidal affections. A studious and sedentary habit; a superabundance of high seasoned and stimulating food; the depressing passions; the intemperate use of spirituous drinks; and the very free use of strong coffee,* are among the most active general causes of this affection. It is probable that these causes operate towards the production of hæmorrhoids chiefly by producing weakness of the digestive organs, as well as torpor of the liver and intestinal canal—giving rise to habitual costiveness, and consequently to a sluggish and congested state of the portal circulation. When to these conditions is added the local irritation of the rectum and anus by the remora and passage of hardened fæces, which necessarily takes place under these circumstances, the supervention of hæmorrhoidal tumours must be especially apt to occur. Among the local causes of hæmorrhoids, besides constipation, may be mentioned the abuse of active purgatives—particularly aloetic preparations; stimulating enemata; the frequent excitation of the venereal organs; pregnancy; parturition; suppositories; clothes worn so tight as to compress the abdomen; ascarides; irritating applications to the anus after going to stool; indurations of the liver or spleen; riding on a hard trotting horse; dysentery; the irritation of calculus in the bladder; enlargement of the prostate gland; lifting and carrying heavy burdens.

Hæmorrhoids have been divided into a great number of species; but although these classifications may be convenient for imparting a full view of the subject to learners, they do not appear to possess any particular practical value. It is sufficient to bear in mind that there are two kinds of hæmorrhoidal tumours—one consisting in a dilated or varicose state of the veins, which may inflame, burst, and give exit to copious discharges of blood; and another kind, more common—consisting

* Richter, Jahn, loc. cit.

in firmer, fleshy, somewhat spongy elongated tumours or excrescences; which may inflame, open iinto fissures, ulcerate or remain entire, and give rise to the various painful and distressing affections already described. When the former tumours burst and bleed, they are called hæmorrhoides fluentes, or *bleeding piles:* when the tumours do not bleed, they are termed H. cœcæ, or *blind piles.*

Treatment.—May we, with safety, attempt to remove or suppress these tumours; and more especially, is it prudent speedily to suppress the sanguineous discharges to which they give rise? Upon this subject very discrepant opinions have been expressed. Cullen was of opinion that the disease is but very rarely of a constitutional character; and consequently that it ought, in all cases, to be removed as speedily as possible; as no danger, he presumed, need be apprehended from the immediate suppression of the hæmorrhoidal discharge. Dr. Gregory appears to be of the same opinion. This view of the subject, however, would inevitably lead to very disastrous consequences, were it generally adopted in practice; for, although hæmorrhoids are, in many cases, of a purely local character, and in such instances may be removed as soon as convenient, without any detriment to the system; yet both experience and analogy present us with abundant testimony of the dangerous consequences which are liable to result from a hasty interference with the hæmorrhoidal discharge, where the disease is founded, as it very often is, on a constitutional predisposition. In cases that depend on a constitutional hæmorrhoidal tendency, and *that have become habitual* from long continuance or frequent recurrence; or where the general health or some chronic affection has been improved by the supervention of hæmorrhoidal discharge; and especially where the disease is preceded and accompanied in its progress by distinct manifestations of an hæmorrhoidal effort in the system, very particular caution should be exercised in the application of remedies calculated to suppress the disease.

Nevertheless, where the discharge is excessive, and endangers the life of the patient by the great depletion it causes, we need not hesitate to interfere with the progress of the disease so far, at least, as to moderate the hæmorrhage, and obviate the immediate and remote dangerous consequences from this source. The general indications to be kept in view in the remedial management of this affection are—to remove and counteract the tendency to plethora in the portal circulation; to obviate the predisposing and occasional causes; to moderate the hæmorrhage when excessive; and to prevent and remove local inflammation and its consequences.

During what may be called the latent stage of the disease, when the various premonitory symptoms enumerated above

exist, the *molimina hæmorrhoidalia*, a general treatment calculated to remove the plethora of the portal vessels, as well as all irritation and preternatural determination to the vessels of the rectum, should be pursued with the view of obviating or moderating the approaching hæmorrhoidal attack. For this purpose, the patient should be put on a light vegetable diet; and if the pulse be full and active, blood should be freely drawn. Particular attention too must be paid to the state of the bowels. If they cannot be kept in a soluble state by vegetable diet, some of the milder laxatives, particularly the flowers of sulphur and cream of tartar,* with an occasional dose of blue mass in the evening, should be given once or twice every day, in doses sufficient to keep the bowels loose, without producing actual purging. The patient must lie on a mattress, rise early, take gentle exercise by walking, avoid severe mental or very active corporeal exertions, abstain from stimulating drinks, as well as from condiments, and according to the observations of Jahn and Richter, from the use of strong coffee.

Treatment of hemorrhoidal discharge.—When the tumours burst and pour out blood, the patient almost always soon feels considerably relieved. The confusion and uneasiness in the head, the irritability and depression of the mind, as well as the general lassitude, tension, and aching in the loins, pressure and weight in the perineum, and in general all those symptoms which have been mentioned as indicative of the hæmorrhoidal effort, abate very materially, and in many instances almost entirely disappear. So long as the hæmorrhage remains moderate, it may with propriety be regarded as a salutary discharge, in reference to the radical affection, or state of the circulation in the portal vessels. It should always be recollected that the *discharge of blood* is only one of the ultimate consequences of hæmorrhoids; and that as its direct tendency is to lessen the engorgement of the vessels of the rectum, and consequently to reduce the vascular hæmorrhoidal tumours, it is

* R. Flor. sulph. crem. tart. āā ℥ss. M. Take a tea-spoonful twice or thrice daily.

When the intestinal canal is in a debilitated and very torpid condition, Richter recommends the following composition:

R. Tartar. depurat.
Magnes. carbon.
Flor. sulph. āā ʒii.
P. camphoræ gr. viii.
Pulv. sem. fœnicul. ʒiii. M. Divide into 14 equal parts. Take one every three hours. Hildebrandt speaks very highly of a mixture of sulph. sodæ and tincture of rhubarb, as a laxative in such cases. Two drachms of the salt dissolved in two drachms of water, to which the same quantity of the aqueous tincture of rhubarb is to be added. One half to be taken in the morning, and the other in the evening.

obviously most proper to leave the hæmorrhage to itself, unless it becomes very profuse, or inordinately protracted. We cannot, however, decide from the mere copiousness of the discharge, whether it should be regarded and treated as a morbid excess or otherwise, for some individuals will bear very large evacuations in this way, whilst others will be much debilitated and exhausted by a smaller loss of blood. Whenever the pulse becomes weak, the countenance pale, and the prolabia exanguious, with much debility, general relaxation, and spasmodic symptoms, means should be adopted to restrain or arrest the evacuation. Here it must be recollected that this, as well as other varieties of hæmorrhage, may be connected with a manifest phlogistic diathesis of the general system on the one hand, or a relaxed, prostrated, and sluggish state of the general and abdominal circulation; in other words, that there is an *active* and a *passive* state of the hæmorrhoidal discharge. In the phlogistic or active form, the patient must be kept cool and quiet, in the horizontal position; his drink must be bland, cool, and acidulated; and nitre, dissolved in a mucilaginous fluid, should be exhibited internally.* If these measures do not adequately moderate the discharge, recourse may be had to dry cupping over the loins or hypochondriac region; or to sinapisms and blisters to the inner part of the thighs, or over the hypochondriac regions; and in very obstinate cases we must have recourse to injections of cold water, or water in which a small portion of the acetate of lead or alum is dissolved; and occasionally it may become necessary to introduce a tampon into the rectum. Considerable benefit may sometimes be derived from the internal administration of one or two grains of the acetate of lead in such cases. It very rarely occurs, however, that any particular difficulty is experienced in arresting the discharge where the general habit is not particularly relaxed. The most obstinate and protracted cases of hæmorrhoidal discharge are those which are termed *passive*, in which the general system is sluggish, the countenance pale, and usually somewhat bloated; the pulse small, feeble, and languid; and the muscular powers debilitated. In such cases, the hæmorrhage will sometimes continue with but short intermissions until the system becomes almost entirely exhausted, and anasarcous effusions take place in the extremities and face, with occasional paroxysms of violent palpitation of the heart, and a peculiarly pallid and bloodless appearance of the surface. In instances of this kind, the sulphuric acid with cinchona, chalybeate preparations, and particularly the acetate of lead with

* R. Pulv. nitrat. potassæ ℥iss.
Aq. fontanæ ℥vi.
P. g. arab. ℥iii. M. S. Take a table-spoonful every two hours.

small portions of opium, will, in general, afford considerable advantage. In such cases, the *tincture of cinnamon*, so generally recommended by the German writers in passive hæmorrhages, will often produce very excellent effects. From thirty to fifty drops of it may be given every three or four hours in conjunction with from eight to ten grains of the prussiate of iron. I have witnessed the good effects of these two articles in a case of remarkable obstinacy. There is no remedy, however, which, in general, produces such speedy salutary effects in chronic cases connected with great languor and relaxation, as *aloes in small doses*. This article is highly recommended by Jahn in cases of this kind ;* for although one of the most improper medicines in the active or ordinary forms of the complaint, experience has shown that where the hæmorrhage depends on debility or relaxation of the vessels, both in menorrhagia and in hæmorrhoids, it is calculated to produce much good by its tendency to excite the action of these vessels. Under the head of menorrhagia, I have already spoken of my experience with small doses of aloes in the passive form of the disease, and in relation to the present affection, I can affirm that its effects in two instances were very prompt and most beneficial. Jahn prefers the watery extract of this article, but I have given it as we find it in the shops, in conjunction with small doses of ipecacuanha.† The diet in such cases should be nourishing, but not stimulating, such as animal broths, jellies, soft-boiled eggs, &c. Benefit will also result from astringent injections, particularly solutions of alum, sage tea, infusions of the root of geranium maculatum, of the blackberry root, &c.

Treatment of hæmorrhoidal tumours or blind piles.—When these tumours are situated on the margin of the anus, they may in general be kept from causing any particular inconvenience, by always washing them with cold water after going to stool, and applying moderate pressure by means of a soft linen compress laid on them and secured by a T bandage. When they become irritated and painful, without much inflammation, washing them with cold water, and the use of mildly astringent and anodyne applications‡ will usually afford considerable relief; but the ordinary astringent ointments, particularly those made of powered nut galls, are often decidedly injurious; and where the inflammation is violent, they are almost always

* Klinic der Chron. Krankh. Bd. iii. p. 557.

† R. G. aloes. socc. gr. xx.
Pulv. ipecac. gr. xxx. M. Divide into 40 pills.
Take one every morning, noon, and evening.

‡ R.—Axungiæ ℥i.
Cerussæ ℥i.
Pulv. opii ℈ii. M. ft. ungt.

highly pernicious. The most soothing application I have ever used in cases of irritated and painful piles, is the following ointment.* To keep the bowels in a soluble state where there is much irritation, the lenitive electuary, in union with powdered nitre, is an excellent medicine.† It is necessary, however, to guard particularly against *purging;* and where there is much inflammation present, this observance is especially important. The fæces should be kept soft, but not liquid; and one such evacuation daily will be sufficient.

When the piles are inflamed, all astringent applications, with the exception of poultices made with lead water, should be avoided. The patient must remain in a recumbent posture; and as the inflammation is almost always the consequence of some degree of strangulation of the tumour by the contraction of the sphincter ani, an attempt should be made to press them within the sphincter. In many cases, however, the pain caused by even the slightest pressure is so intense, and the tumours are so much swollen, that all attempts to return them are abortive. In this case we must previously endeavour to reduce the inflammation; and for this purpose emollient fomentations and cataplasms—or cold lead-water must be applied, and where the pulse is active, an efficient blood-letting from the arm should be practised. I have also known much good derived from the above named mixture of nitre and lenitive electuary given in small doses, so as not to procure an evacuation for the first twenty-four hours. The patient should take nothing but toast water and very thin farinaceous preparations for his food. Some writers have recommended the application of leeches to inflamed hæmorrhoids, but the advantage to be derived from this practice is seldom considerable. Montegre is decidedly opposed to local depletion in this way, and thinks that leeches applied to the inflamed hæmorrhoids tend often to aggravate the symptoms by irritating and determining the blood to the parts. Scarifying the tumours, or making free incisions into them, will in general do more towards the reduction of the inflammation than any other applications. Dr. Hartshorn tells me, that he always pursues this practice in cases of inflamed piles; and he has never known any dangerous consequences to follow the operation, but almost invariably unequivocal benefit. As soon as the inflammation is sufficiently reduced to enable us to press up the tumours within the sphincters, it

* Take two ounces of lard and a drachm of flowers of sulphate; mix and rub them together between two plates of lead until they acquire a black colour.

† R.—Elect. lenitivi. ℥i.
Pul. nitrat. potass. ʒi.
Misce.—Take a tea-spoonful once or twice a day.

should be done; and cold water, with a small portion of the acetate of lead dissolved in it, cautiously injected into the rectum. Nothing produces a more soothing effect than cold injections in moderately inflamed piles; more especially, when they are situated within the sphincter. Montegre places great reliance on the use of such injections where the inflammation is not very intense, and where, moreover, the piles do not bleed.

To relieve the pain and irritation which arise from *fissures and ulcers* of the lower part of the rectum, some surgeons recommend the removal of the tumours by which the pain is usually kept up; and there can be no doubt of the propriety of this practice where other means fail to procure relief. The application of caustic and gently escarotic ointments or lotions will in general be necessary, where the ulcers assume a chronic character, with elevated and indurated edges; but undoubtedly the most effectual measure is excision of the tumours, or of the ulcerated part, when they are accessible to the knife.

The excrutiating intermitting pains which occur after each alvine evacuation, and in many cases without either fissure or much inflammation, apparently from an extreme sensitiveness of the nervous extremities of the affected parts; and which Montegre calls *nervous hæmorrhoidal pains*, are more effectually relieved by cold ablutions and injections, than by any other applications that have as yet been recommended. M. Montegre, who dwells particularly on this remedy, states, that he was led to resort to it from having observed, that "when patients affected with the complaint, happened to discharge their fæces while bathing in a river or the sea, they sometimes escaped the torment which ensued when they used a common commode." I have known much relief obtained from the application of the following liniment to the protruded piles, after having washed them with cold water.* Having applied the liniment, the tumours must be pushed up within the sphincter.

It is in cases of this kind, that Ward's paste will occasionally procure very considerable relief.† I have used this electuary in a number of instances, and sometimes with great ad-

* R. Ol. amydalor. ℥i.
Extract. stramonii. ʒi.
Sulp. morphiæ. gr. vi.
M. ft. linimentum.

† R. Pulv. rad. enul. campan.
Pulv. peper. nig. āā ℥viii.
Pulv. sem. fœnicul. ℥xii.
Mel. despumat.
Sacch. albi. āā ℥xvi.

The three first are to be intimately mixed; then melt the honey and sugar over a fire into a clear syrup; add the other ingredients, and form an electuary.

vantage. Dr. Gregery very justly observes, that although it may be very difficult to explain on what principles this stimulating mixture proves useful, experience has fully demonstrated its powers.

When from a state of chronic irritation or inflammation of the mucous membrane of the rectrum, there is a profuse or troublesome leucorrhœal discharge from the anus, recourse may be had to the internal use of balsam copaiva, oil of turpentine, or of cubebs, and slightly astringent injections should be thrown into the rectum three or four times daily. For this purpose, a weak solution of sulphate of copper, (one grain to an ounce of water,) will in general answer very well.

Where, however, the pain arises from hæmorrhoidal tumours of a permanent character, located either on the margin of the anus or high up, and brought to view only by pressing down as in going to stool, the removal of them by ligature or the knife, may be considered as the only means for effecting a radical or effectual cure; and this may always be safely done where the local inflammation and general irritability of the system are not very great, or when no *habitual* hæmorrhagic discharge has been established.

Where alarming consequences, or symptoms of general ill health follow the suppression of hæmorrhoids, we should endeavour to re-establish the complaint. This may usually be done without much difficulty by *aloetic* purgatives, small doses of the extract of savin, stimulating enemata, particularly terebinthinate, or aloetic injections, leeching about the anus, semicupia, and cupping in the neighbourhood. Richter strongly recommends the following combination for this purpose.*

CHAPTER XXVIII.

DIABETES MELLITUS.

Diabetes was known to the ancient Roman physicians, but it does not appear that they had any knowledge of the most essential characteristic of the disease—namely, the saccharine character of the urine. They seem to have considered the

* R. G. aloes.
G. assafœtid.
Extract. hellabor. neg.
Ferri sulphur.
Crocci orient. ʒi.
Mucilage. g. arab. q s.——Divide into two grain pills. Take from five to eight every evening.

disease only as a rapid discharge by the kidneys of whatever drinks were taken into the stomach, without having undergone any changes by the digestive or assimilative functions. "Diabetes," says Ægineta, "est subitus potulentorum exitus, talibus per urinam redditis qualia pota fuerant"—"a sudden discharge of liquids drank which are voided by the urine such as they were taken in by the mouth." Celsus too, says diabetes consists in a greater discharge of urine than there are fluids taken in by the mouth; and Aretæus, who has given an extremely accurate description of the course and phenomena of this disease, defines it in the same way. The saccharine character of the urine in diabetes, was not indeed known or pointed out, until Willis directed the attention of the profession to it; and although this morbid condition of the urine is unquestionably the essential characteristic of diabetes, it has frequently been wholly left out of view in the definitions which have been given of this disease. Cullen himself has fallen into this error in his definition of this malady. "It consists," he says, "in the voiding of a preternatural quantity of urine;"—and in thus neglecting to notice the characteristic quality of the urine, he confounds it with diseases which are radically distinct from it, and which resemble it only in the accidental circumstance of being attended with an unusually large flow of urine. There are at least three varieties of urinary disease which are accompanied with a preternatural flow of urine, but which are nevertheless essentially distinct, as well from each other, as from the disease now under consideration.

By diabetes, then, is meant that form of urinary disease, in which the urine *is sensibly impregnated with saccharine matter, and voided in an unusually large quantity, being attended with great thirst, voracious appetite, and an obstinately dry and harsh skin.*

Diabetes usually makes its appearance in a very gradual manner, although in some instances it comes on suddenly, with slight chills and febrile commotions. When its invasion is gradual, it is generally attended from the first with various indications of a disordered state of the digestive organs—such as variable appetite, acid eructations, occasional nausea, and vomiting.

The quantity of urine discharged in this affection, is almost always extremely great; and in some instances truly enormous. I have seen two cases in which from twelve to fifteen pints of urine were discharged in the course of twenty-four hours, for several weeks. That such a drain from the system must cause great and rapid exhaustion and wasting of the body, may be readily conceived; and, indeed, the utmost degree of prostration and emaciation never fail to ensue as the disease advances in its course.

The urine in this disease is generally of a pale straw-colour, approaching sometimes to a shade of green.* Its smell is usually faint, resembling that of milk, or according to some, that of fresh animal broths; and its taste is more or less sweet, from the sugar which it contains. Diabetic urine always contains very little or no urea, and in most instances it is entirely destitute of lithic acid. It enters very slowly into putrefactive decomposition, but passes readily into the acetous or vinous fermentation. In these circumstances it differs very essentially from the urine of other varieties of disease resembling diabetes—in which latter it always putrefies with great rapidity, and becomes exceedingly fetid.

Symptoms.—The constitutional symptoms which attend this disease, are—very urgent thirst; craving appetite; dry skin; a distressing sense of weight and uneasiness in the stomach after taking food; dry and parched mouth; white, foul, sometimes clean and red tongue; wasting of the flesh; a feeling of languor and aversion to exercise; debility; pain and weakness in the loins; irregular action of the bowels, being most commonly costive; some degree of inflammation and pain about the prepuce and glans penis, and especially about the external orifice of the urethra; loss of virility; cold feet, with a tendency to œdema in the latter period of the disease; dull and aching eyes; indistinct vision with vertigo; headach; and difficulty of breathing. As the disease gains violence and draws towards the fatal termination, the gums become spongy and the breath fetid or disagreeable, and the voice rough, or extremely weak and whispering. The emaciation and exhaustion proceed with great rapidity towards the conclusion, and the patient finally sinks into a state of somnolency or drowsiness, from which it is often extremely difficult to keep him roused even for a moment. In general, the pulse is but little or not at all accelerated in the early periods of the complaint; and in many instances it is even less frequent than in health. In the advanced stage of the disease, however, when the emaciation and exhaustion are very great, it is not uncommon to find the pulse very frequent and quick. In some instances the blood has been found sizy, or covered with a thick inflammatory crust. Home states, that the blood of one of his diabetic patients manifested a highly inflammatory character, although the pulse was rather below the regular standard in frequency and strength. It is by no means unusual for this disease to terminate in apoplexy—a circumstance somewhat remarkable,

* Cases have been frequently observed, in which the inordinate secretion of urine has suddenly ceased without any assignable cause. A distressing strangury has been known to supervene on the occurrence of such sudden cessations of the diabetic symptoms. (Dr. Carter, Med. Repos. 1823.)

when we consider the exhausted and worn down condition of the system in the last period of the disease. In a case which I attended some years ago, the patient became completely lethargic for about eighteen hours previous to death, and during this period the urinary secretion was almost entirely suspended. I suspect, indeed, from this case, as well as from others which have come under my notice, that in all instances, where the disease terminates in a state of stupor or lethargy, the secretion of urine is greatly, if not almost entirely suspended. The disease, in such instances, seems to pass from the kidneys to the brain—an occurrence which is not uncommon in *ischuria renalis.*

The duration of diabetes is extremely various. In some instances, not more than four or five weeks intervene between the commencement and the fatal termination of the disease; whilst the majority of cases are protracted to several months, and occasionally to as many years. In some instances considerable remissions occur in the progress of the malady; and cases are mentioned, in which the diabetic symptoms recurred in a strictly periodical manner, with perfect intermissions of longer or shorter duration.

In some individuals there appears to exist a natural or constitutional predisposition to this disease; and there are many instances on record, which go to prove that this predisposition is sometimes hereditary. I attended a young man labouring under this disease a few years ago, in consultation with Dr. Parish, who had lost his mother and a sister by the same complaint. Dr. Prout mentions several instances of this kind; and similar cases are to be found in other works on this disease.

Of the exciting causes of diabetes our knowledge is as yet but very limited and unsatisfactory. It would appear from the observation of some writers, that males are more subject to the disease than females. According to Rollo, those whose digestive organs are unusually active, and who indulge freely in the pleasures of the table, are most liable to this malady. The free and habitual use of condiments, and of vegetable articles of diet, especially the farinaceous substances, is said to favour the occurrence of this disease in an especial manner. Protracted grief; despondency; deep sorrow; chagrin; and a sense of great affliction, when favoured by an exclusive vegetable, or by weak and innutricious diet, have been known to give rise to diabetes. Sudden atmospheric vicissitudes, more especially when attended with protracted humidity, are supposed also to be capable of giving rise to this disease.* That the

* Ætius asserts that diabetes has been known to occur in consequence of the bite of the *coluber dipsas;* and Frank mentions the same

habitual or frequent use of diuretic and spirituous potations should have a tendency to produce diabetes in persons who are naturally predisposed to it, can scarcely be doubted. It is probable also that renal calculi have sometimes produced this complaint. Upon this subject, however, all our sentiments, are as yet in a great measure conjectural; for the disease is frequently found to make its appearance without any assignable exciting cause whatever.*

Pathology.—The opinions which have been expressed concerning the pathological character of diabetes are very various and contradictory. According to the celebrated Mead, its primary seat is in the liver, and not in the kidneys. Some pathologists have ascribed it to spasm in the secretory organs, and placed it among the spasmodic diseases. Others attribute this disease to suppressed perspiration, in consequence of cold or some other adequate cause. The most prevalent opinion on this subject, however, is that which ascribes the disease to a laxity of the kidneys and to a debility of the urinary organs in general. Sydenham, Rollo, Cullen, and others, regard this affection as depending primarily on a disordered state of the digestive organs, in conjunction with a defect in the assimilating functions. Home also entertained a similar idea concerning the pathology of this disease; he considered it as arising from a defect of the assimilatory process. Quite recently, Dr. Ayre has published some observations on this disease, from which it appears that he considers it as depending wholly on chronic inflammation of the kidneys. Dr. Barry maintains that the grand source of diabetes is to be looked for in the fluids; whilst Dr. Johnson is of opinion that it is a disease of the general system, or at least that its pathology cannot be affixed on any one particular organ; neither in the kidneys, the liver, the stomach, nor the lungs exclusively.

Whatever may be the essential nature of diabetes, or the primary seat of the disease, it appears quite certain, that the proper functions of the kidneys are greatly deranged or perverted in this disease. That this is the case can admit of no doubt, when we advert to the circumstance that, according to the experiments of Nicholas, Granville, and Wollaston, the serum of diabetic blood does not contain a particle of sugar. Its presence in the urine can, therefore, arise only from a perverted secretory action of the kidneys; and whatever may be the im-

fact from his own observations. Excessive indulgence in venery has also been known to give rise to this disease.

* Reil, Home, and others assert that diabetes is sometimes infectious. This is exceedingly improbable. It is well ascertained, however, that in some districts it is vastly more common than in others. At Colombo, in India, it is so frequently met with, as almost to merit the title of *endemic*.

mediate cause of the functional derangement of these glands, its existence must be regarded as the proximate cause of all the characteristic phenomena of the disease. Another pathological condition, though less demonstrable than the former, is, as I conceive, a peculiar state of the blood, which may perhaps exist as the immediate cause of the perverted renal action. That the constituent elements of the blood are not such as they are wont to be in health, is rendered probable by the effects which different articles of aliment have, both on the saccharine quality and on the quantity of the urine. If by an exclusive use of animal diet, the secretion of urine becomes less copious, and its saccharine character disappears, the inference naturally is, that by this kind of food the elements of sugar are reduced in the blood, and consequently less abundantly combined by the perverted action of the kidneys. In health there is always more or less *urea* secreted by the kidneys, but in diabetes, this peculiar urinary compound is rarely formed in any appreciable quantity, and very often none at all. When we take into view the close chemical analogy which exists between this substance and sugar, it appears extremely probable that the urea which is secreted in health, is, in diabetes, converted into sugar by the perverted action of the kidneys. According to the analysis of Prout, for instance, urea and sugar are composed of the following constituent elements—

Urea.	*Sugar.*
6.5 hydrogen.	6.5 hydrogen.
20.5 carbon.	40.0 carbon.
26.5 oxygen.	54.0 oxygen.
46.5 azote.	— azote.

Thus the absolute quantity of hydrogen, in a given weight of sugar and of urea is precisely the same, while the quantities of carbon and oxygen of sugar are just double those of urea. From all this it would appear probable that diabetic blood is deficient in azote, in consequence of which the kidneys are not furnished with a sufficient quantity of this element to form *urea*, of which it constitutes a large constituent part; and therefore sugar, which contains no azote, is the result of the renal action. This idea, first started I believe by Wollaston, is rendered still more probable by the effects which an exclusive animal diet has in reducing the quantity of sugar in the urine and increasing the formation of urea; for the large proportion of azote which animal food furnishes to the blood, supplies this element in sufficient proportion for the formation of *urea* by the kidneys, in consequence of which the secretion of sugar is either much diminished or wholly arrested. From these observations it is quite probable, as I have already said,

that the blood itself, in this disease, is defective in the regular proportions of its healthy constituent elements. But here we are necessarily led a step farther in our inquiries into the pathology of this malady. What is it, namely, that causes this defective or innormal condition in the composition of the blood? We can think of but one cause, and that is, a defect in the digestive, but more especially of the assimilative functions of the system. Thus, then, it would appear that diabetes is a disease by no means local or confined in its pathological state—but, on the contrary, one in which the digestive and assimilative functions, the state of the blood, and the particular functions of the kidneys, are all deeply and essentially implicated.

After all, our views concerning the pathology of this mysterious disease, are as yet in a great measure conjectural. In this uncertain state of our knowledge, therefore, I may be allowed to throw out a conjecture on this subject which must be left for future inquiries either to refute or confirm. It is well ascertained, that the bile contains a very considerable portion of a saccharine matter, called *picromel*. May not a morbid condition of the liver, by which this constituent of the bile is prevented from being formed, give rise to the vicarious secretion of a similar substance by the kidneys, and thus produce diabetes? An accurate analysis of the bile of a diabetic patient would throw much light on this point; and until this is done it must remain wholly hypothetical.

Post-mortem appearances.—It is a singular circumstance, that the lungs are almost universally found in a diseased condition in those who die of diabetes. Dr. Johnson declares, that so far as his inquiries go, there is not a single instance on record, where, on dissection, pulmonic disease was not discovered in persons who had sunk under this disease.*

The kidneys frequently exhibit an increased vascularity; and many writers state, that these organs are often enlarged, soft, flabby, and otherwise diseased. Some traces of disease are also sometimes discovered in the mesenteric glands, in the lacteals, and in the mucous membrane of the alimentary canal. The bladder also sometimes exhibits a morbid condition, being considerably contracted, with its coats much thickened and indurated.

* In a recent number of the Strasburg Hospital Reports, Mr. Suroth gives an account of a case of diabetes which proved fatal in a few months. On dissection, no apparent change was discovered in the kidneys, liver, spleen, or pancreas. But in the chest "the morbid phenomena far exceeded the symptoms during life. There was hydrothorax in the left side, hepatization of the left lung, and in its upper portion a large cavernous excavation; universal adhesion of the right lung to the side, but its structure was sound; hydro-pericardium; aneurismal dilatation of the pulmonary artery at least two inches in diameter. The blood was every where fluid in the vessels, and mixed with air.

The prognosis in this disease is always unfavourable; few, comparatively speaking, recover from its attack; and the cure, under the most favourable circumstances, is always tedious and difficult. I have seen but one case of recovery out of six, that have come under my care. Cullen and Currie state, that they never knew a single instance of this disease having yielded to remediate treatment; and the celebrated Frank succeeded only in two out of ten cases which he treated. Many other physicians have nevertheless been much more fortunate in their treatment of the disease; and although it is certainly exceedingly difficult to cure this malady, it is not quite so intractable as Cullen was led to believe.

Treatment.—The plans of remediate treatment recommended in this disease by writers, are as various and discrepant as the notions which have been advanced concerning its pathology. A vast number of remedies have been mentioned as having been used with success in this intractable malady; but as they have been generally introduced upon vague and hypothetical grounds, or adopted in a purely empirical manner, there are but few of them which appear now to deserve any attention.

I have already stated that the blood drawn from diabetic patients exhibits in many instances a decidedly inflammatory appearance. From this circumstance, and from the firmness of the pulse observed in some cases of the disease, a direct antiphlogistic treatment has been proposed and successfully practised by several eminent physicians. Mr. Watt of Glasgow, who, I believe, first resorted energetically to the depletory plan of treatment in this disease, has adduced several very interesting examples of its efficacy in this affection. Since the publication of his valuable work on this malady, venesection has been frequently resorted to, both in Europe and in this country; and cases have been reported in which its usefulness appears to be well attested. It is indeed pretty generally admitted that the abstraction of blood may, in some cases at least, be very advantageously practised, although there are very few, I think, who would be willing to accord to it as much importance as is done by Mr. Watt. Dr. Prout observes, that in recent cases of a manifestly phlogistic character, blood-letting is often a very valuable remedy. In very protracted instances, however, occurring in old and infirm subjects, and indeed in all cases attended with great debility, it is scarcely necessary to observe that this remedy can very seldom be required. In one of the cases which I treated some years ago, the pulse was such as induced me to think advantage might be obtained from the abstraction of a portion of blood. The patient was accordingly bled to the extent of fourteen ounces, but instead of the benefit which I anticipated, an obvious aggravation of the affection was the consequence. It must be observed, however,

that the only case which I have ever succeeded in curing was bled twice, and the pulse in this instance was by no means very active or hard, nor did the blood drawn exhibit the inflammatory crust. It appears indeed that blood-letting is, in general, better borne by diabetic patients with a feeble state of the circulation, than in most other affections under the same state of arterial action. Mr. Watt relates a case of diabetes in which the pulse was slow, feeble, and irregular; there was also great prostration of strength, and the lower extremities were cold and œdematous. The blood was very dark with a crassamentum as black as pitch, and wholly devoid of tenacity. Notwithstanding these appearances, the lancet was freely employed, and the result showed that it was proper and judicious. The bleeding was repeated six times, and it was not till the fourth repetition of it, that the appearance of the blood was changed, the crassamentum having now become dense and sizy on the top. On the fifth bleeding, the buffy coat was contracted to the size of a quarter of a dollar; after the sixth it was still firmer, and the serum exhibited a white milky appearance. The patient felt better after every bleeding, and he recovered without much difficulty. In a late number of Majendie's Journal, (1828,) M. Lefevre has related a case of this disease which was successfully treated by blood-letting, in conjunction with an exclusive animal diet, the use of milk and lime water, and the hot bath every evening. Upon the whole, I think it may be concluded that venesection is a remedy which deserves considerable attention in the treatment of this disease, although it is certainly by no means so generally salutary as was supposed not many years ago.

Local bleeding by means of leeches and cups, has also been resorted to with excellent effect. Dr. Ayre, who considers this disease as depending on chronic inflammation of the kidneys, considers the application of leeches over the region of the kidneys as decidedly the most effectual means we possess for subduing this malady. It appears, however, that he has founded both his theory of the pathology of the disease, and his high opinion of the efficacy of local depletion on the fortunate result of but a *single* case; a foundation which it must be confessed is much too infirm to justify us in placing any great reliance on his experience in this respect. I should be inclined to prefer cupping to leeches, as the former, besides its evacuant effect, is decidedly the most powerful derivative measure.

Opium.—There is no article which possesses so much reputation as a remedy in diabetes as opium. Since the time of Ferriar, there have, perhaps, been few cases of diabetes treated in England and in this country, in which this powerful narcotic has not been tried in some form or other. Without speaking in very extravagant terms of its efficacy in this disease

general experience will justify the declaration that it is, without doubt, one of our most useful remedies in this malady. Besides its tendency to diminish the inordinate secretion of urine, it is particularly useful in subduing that nervous irritability which, in most cases, becomes so distressing in this disease. Dr. Warren was one of the first who employed this narcotic extensively in this affection. (Lond. Med. Trans. College of Phys. vol. iv.) Dr. Ferriar also used it in nearly all the cases he relates; he gave it in combination with bark and uva ursi, in the proportions of a scruple of each of the latter to half a grain of the opium, three or four times daily. In conjunction with this combination, he directed the use of lime water and an animal diet. Prout regards opium as decidedly the best remedy we possess for the cure of this affection; and of all its preparations, he thinks Dover's powder is the best. It must not be forgotten, however, that where the pulse is strong and firm, blood-letting is an important, if not an essential, preliminary to the employment of this narcotic. "The first immediate effect of opium upon the urine, says Prout, is to increase its specific gravity. This depends on the diminished secretion of water, while the sugar remains unaltered, in consequence of which the urine is rendered more concentrated, and consequently heavier. As the remedy is persevered in, the urine acquires its original specific gravity, and becomes even lighter. The quantity of sugar is diminished, and that of urea much increased, sometimes so much so as to become greater than natural. Lithic acid soon after makes its appearance in abundance, and the urine acquires altogether a more natural colour and appearance, &c." Latham states that he has obtained much advantage from a combination of the *carbonate of iron* and opium, in cases of a chronic character and attended with much debility and nervous irritation. Much of the benefit which results from the use of opium depends, probably, on its tendency to excite the exhalents of the surface. A diaphoresis, in whatever way it may be produced, rarely fails to check the excessive flow of urine, and this effect is always a considerable advantage, although the urine may remain saccharine. From five to eight grains of Dover's powder may be taken every four hours; or we may give a grain of opium, either by itself or in combination with uva ursi and lime water, two, three, or four times daily. It is of importance, when the patient is put on the use of this narcotic, to keep his system constantly and pretty equally under its influence. Opium may also be advantageously given with lime water. From thirty to forty drops of laudanum, in a gill of lime water, may be given three or four times daily.

The Germans have been much in the habit of giving large doses of *alum* in this affection. Cases are related, in which

scruple doses of this article were given several times daily with very decided benefit.

Dr. Carter, in his interesting and valuable series of Hospital Reports, has related a case of diabetes, where the disease resisted various modes of treatment, until "hard work, aided by warm clothing, and a scruple of Dover's powder at night, entirely removed the disease." Dr. Johnson, in remarking on this case, observes, "it is evident that the skin, as an extensive outlet, sympathizing powerfully with almost all the glandular viscera, is an important agent in the removal of this disease. Its agency, therefore, should never be neglected in the treatment of this disease." Dr. Marsh, in his valuable memoir on this disease in the Dublin Hospital Reports, speaks in high terms of the usefulness of exciting the action of the skin in the treatment of diabetes. For this purpose, he directed the same measures which I have just mentioned as having been successfully employed by Dr. Carter—namely, "hard work, warm clothing, and large doses of Dover's powder." In the case which terminated favourably in my own hands, I united the Dover's powder to uva ursi in doses of fifteen grains each, three times daily. This will generally excite *emesis* for the first two or three days; and the good effects of this remedy appeared to me to be considerably enhanced by the vomiting which it produced. There can exist no doubt that very active exercise or labour, by favouring free exhalation from the surface, will often assist very materially in subduing this disease. Some have recommended the warm bath with the same view, but this remedy has too strong a tendency to relax and debilitate the system, to admit of very frequent application in this affection. Frictions with dry flannel, however, are not subject to the same objection, and they have been resorted to with manifest benefit.

Magnesia has of late years been recommended in England, as a remedy of considerable powers for the cure of diabetes. Dr. Trotter has published an account of five cases which were effectually treated with this article. He directed his patients to take from one drachm and a half to two drachms of the pure magnesia, in twenty-four hours. The relief obtained, he says, was generally prompt, and attended with no unpleasant consequences. In one instance out of three in which I have prescribed the magnesia, a manifest impression was made on the disease, but the relief obtained was only temporary. I have met with several accounts in the journals since the publication of Dr. Trotter's cases, in which the beneficial effects of this article are set forth in diabetes. I suspect greatly, however, that its usefulness is chiefly confined to that form of urinary disease, in which the urine, though morbidly increased in quantity, is wholly free from any saccharine matter.

Emetics are recommended by Richter, in the treatment of this

disease. He has given an account of several cases which were perfectly removed by the use of ipecacuanha in doses sufficient to produce active emesis. In one case, he asserts that the disease was removed completely in the course of twenty-four hours. It would seem, however, that the cases which he has adduced in favour of this practice, were characterized only by an increased discharge of urine, for he no where mentions a sweet or saccharine urine. Indeed, the custom which prevailed formerly, of including all the urinary affections which are attended with a preternaturally copious discharge of urine, under the head of diabetes, throws no small degree of ambiguity and uncertainty over the recorded experience of the practitioners of the preceding ages.

Among the remedies which have been employed with success in this malady, the *carbonate of ammonia* deserves respectful mention. Dr. Neumen, of Berlin, has given an account of a case which yielded to the use of this remedy, continued for about four months. The dose was gradually increased from five grains thrice daily, to fifty grains in the day. I have heard of two other instances, in which benefit was obtained from this article, though both cases finally terminated fatally. Alkaline remedies have indeed been very frequently employed in the treatment of diabetes. Lime water especially, was at one time much resorted to in this disease. Ferriar seems to have placed very considerable reliance on its usefulness, since we find it mentioned in every case which he has reported. I have myself used it in three or four cases, in conjunction with uva ursi, but I did not perceive that any advantage arose from its exhibition.

Rollo thought very favourably of the powers of the *ammonium sulfuratum*, or hepatized ammonia, which he rarely failed giving in conjunction with the more important measure, an exclusive animal diet. In some instances, he administered the kali sulfuratum to the extent of from one to two drachms daily, dissolved in water, and continued for several weeks.

The application of an epispastic over the sacrum, or the region of the kidneys, has been thought a very useful auxiliary in the cure of this disease. Rollo, Frank, and Marryat, speak favourably of this practice; and I am inclined to think that it deserves attention. In the case which terminated favourably under my care, two large epispastics were applied on the inside of the thighs; as however several other active means were used at the same time, it was impossible to say what share this, or indeed any of the other remediate measures, had in the production of the favourable result.

Tonics were formerly much resorted to in the treatment of diabetes—a practice which was founded on the supposed flaccid and debilitated condition both of the kidneys and the digestive

organs. Ferriar gave the cinchona with opium and uva ursi; but the earlier physicians more commonly employed the metallic tonics—more especially iron. Where the system is much relaxed and exhausted, I doubt not at all, that the sulphate of quinine may be often very usefully given. If I am not mistaken, Prout advises the employment of this preparation in union with opium. I have heard of an instance in which the administration of three grains of quinine with a grain of alum and the same quantity of ipecacuanha, administered three times daily, produced very excellent effects.

The *mineral acids* also are said to have been given with complete success in this affection. *Gilby* affirms, that out of four cases, he cured three with the internal use of the *nitric acid;* and Scott succeeded in one case with the same remedy. Brea, moreover, cured a case of this disease with the conjoined use of the nitric acid internally, and mercurial frictions over the lumbar region.

Besides the remedies already mentioned, a vast variety of other means are noticed by authors, all of which have been used with more or less advantage, if we are to place any credit in the statements that have been given. Among these may be mentioned the following, as perhaps the most entitled to attention: viz. alum;* spir. turpentine; tinctura ferri muriatis; flor. zinci; cuprum ammoniacum;† mercury‡ digitalis; the internal use of cantharides;§ valerian; assafœtida; catechu; kino; camphor; myrrh; phosphoric acid; phosphate of soda; phosphate of iron.

I have hitherto said nothing concerning the dietetic means for treating this disease, which, after all, are perhaps the most important and indispensable to success. Rollo was the first who adopted fully the plan of restricting diabetic patients to an exclusive animal diet, with the view of keeping out of the circulation, as much as possible, the saccharine principles which vegetable substances alone afford. When we recur to what has been stated above concerning the close chemical analogy between urea and sugar; the former being little else than a duplication of the constituent parts of the latter, with the addition of a large proportion of *azote;* it would seem that in diabetes there is a great deficiency of azote in the blood, in consequence of which the kidneys cannot form *urea;* but instead of it, secrete the saccharine matter which characterizes the disease. Now, as animal substances—especially the muscular parts, contain a large proportion of azote, whilst vegetables contain little or none of it, it appears probable, that the

* Selle. Beitr. zur Natur. und Arzneiwiss. Bd. i.
† P. Frank. De Curand. Homin. Morb. p. 65.
‡ J. Frank. Ratio Instit. Clinc. Ticinem. p. 208.
§ Brisbane. Select Cases, &c. Stœller, Hufeland's Journal. Bd. 6.

benefits which result from the former kind of food, arise from the abundant azote which it furnishes to the system, by which the kidneys are enabled to secrete urea instead of saccharine matter. This accords with the gradual changes which occur in the urine in the progress of amendment—for in proportion as the quantity of sugar decreases, that of the urea increases.

Whatever may be thought of these speculative views, it is very generally admitted, that an exclusive animal diet constitutes decidedly one of our most efficient means for curing this disease. It is true, that within a few years, Dr. Starky, physician of the Cork general dispensatory, has adduced some facts which would seem to show, that, contrary to the common opinion, vegetable substances, or such as contain sugar, will sometimes prove more beneficial than animal food. He states that he has cured several cases of this disease with a vegetable diet, and a drachm of phosphate of soda three times daily. Dr. Johnson also seems inclined to place some reliance on the occasional usefulness of a vegetable diet in this affection. Were these cases attended with a saccharine urine? I am much inclined to believe that this fact is not always inquired into, physicians being satisfied that they have a case of diabetes before them, when they find the patient suffering great thirst, ravenous appetite, and an enormous discharge of urine. All these symptoms may, however, exist without the disease being diabetes—at least diabetes of the kind we are now considering. I shall presently have to describe a variety of this disease, in which there is an excess of *urea*, and in cases of this kind a vegetable diet is decidedly indicated, and useful. It is this latter disease, perhaps, which Dr. Starky treated; and if so, we need not wonder that a vegetable diet was found so useful. The observances to be attended to, in the regulation of the diet for a patient affected with this disease, may be summed up as follows:

Fresh bread and potatoes should be avoided; but the patient may use moderate portions of pilot bread, and biscuit. It is of great importance that the quantity of food taken at each meal, should not be more than the stomach can readily digest. Roasted or boiled beef, beef-steak, mutton, lamb, and game, should form the principle part of the food; and it is said that fat meats are, in general, more beneficial than the lean parts. For drink, the patient may use water, alum whey, weak brandy and water, milk and water, and beef or chicken tea.

DIABETES INSIPIDUS.

I PROCEED now to the consideration of those varieties of urinary disease in which the excessive urinary secretion is attended with an excess of one or more of the regular ingredients of healthy urine. These affections bear so close a resemblance to diabetes mellitus, that up to the time of Willis they were comprehended indiscriminately under the single term diabetes. Collectively they constitute the disease which has since the time of this writer been denominated *diabetes insipidus;* but as they are characterized by very different conditions of the urine, it is more consistent with scientific accuracy to treat of them, as Prout has done, under their several appropriate heads.

In one variety of these urinary affections, the characteristic state of the urine *consists of an excess of urea*, with an augmentation of its quantity, often not inferior to that which occurs in diabetes mellitus. Bostock has given a particular account of a case of this kind, in the third volume of the Medico-Chirurgical Transactions, with an analysis of the urine, from which it appears that the patient discharged on an average twenty pints daily, containing seven and a half ounces of urea, without a particle of sugar. But no writer has investigated this disease so minutely, and described its course and phenomena so accurately, as Dr. Prout in his highly valuable work on the diseases of the urinary organs. In this affection, there is almost invariably a very frequent and distressing desire to pass urine, both by day and night. In some instances, though exceedingly seldom, the quantity of urine is not much increased; but in a great majority of cases, copious diuresis is a prominent symptom. "The quantity of urine, says Prout, appears to be particularly liable to be increased by cold weather, and by all causes producing mental agitation. In some instances the patient experiences a considerable sense of uneasiness or aching pain in the loins, and along the course of the ureters, and there is occasionally a good deal of irritation at the neck of the bladder, extending along the urethra." The skin in this affection generally retains its regular functions, being often moist, with general diaphoresis, even when the urinary affection is exceedingly aggravated. The desire for food and drink also, is not morbidly urgent, except in very violent cases; nor are the stomach and bowels often particularly deranged—the tongue being generally clean, and the alvine discharges regular, both in time and appearance. It would appear from the observations of Prout and others, that persons of a thin and spare habit of body, "with a sort of hollow-eyed anxiety of ex-

pression in their countenance," are the most liable to this complaint.

With respect to the causes of this form of urinary disease, little is known of a definite character. Prout observes that whatever debilitates the system, and particularly the urinary organs, may give rise to the complaint.

There is another variety of urinary disease, in which the presence of a large portion of albuminous matter in the urine is the characteristic symptom. This is the variety which has probably been most commonly described under the name of diabetes insipidus; for along with its albuminous principle, the urine is *always* greatly increased in quantity. There are two varieties of albuminous matter occurring in the urine—namely, the chylous and the serous. The first, according to the observations of Prout, occurs the most frequently; "it may, however, be remarked, says this writer, that strongly defined instances of either variety are not very common, and that by far the most frequent form which the disease assumes, seems to be of an intermediate character; that is to say, the albuminous matters partake in some degree of the properties of both those of chyle and serum; though generally more those of the chyle."

A morbidly copious discharge of chylous urine was known and described by the ancients as a variety of diabetes. Celsus divides too great a profusion of urine into thin and thick: the former kind, he says, though most frequent, is less dangerous than the latter variety, in which a great quantity of urine is discharged, together with chyle or milk, and the body consequently rapidly deprived of its nutrient principles. Some writers deny that the chyle ever passes off with the urine, as has been stated. They assert, that where the urine has exhibited a milky colour, it must have arisen from pus formed in the kidneys, and intimately mingled with the urine in its passage down the ureters to the bladder. That this is a mistaken opinion, is satisfactorily attested by some of the most observant physicians, of both ancient and modern times. The appearance of chyle in the urine has been noticed even in apparently healthy subjects. Van Swieten, in his Commentaries, says, "that he has seen in himself some hours after a meal, and especially after hard walking, his urine turbid and milky at the moment that it was evacuated;" and, he adds, that he had afterwards observed the same kind of urine in others. Galen also seems to have noticed this chylous state of the urine. (De Aliment. Facult. Lib. i. c. 2.) But the authority of Prout is alone sufficient to establish the opinion that the milky appearance of the urine in cases of this kind, depends solely upon the presence of unchanged chyle. When, along with the chyle, there is a large portion of albuminous matter in the urine, this fluid undergoes

a spontaneous coagulation, assuming the appearance nearly of *blanc-mangé*. This kind of urine is extremely prone to decomposition, becoming speedily very offensive to the smell. In some instances, says Prout, the urine, on standing awhile, "throws up a sort of creamy matter upon its surface."

The general symptoms which accompany this affection, after it has continued long and is violent, do not differ materially from those that attend diabetes mellitus. In violent cases the thirst becomes very tormenting, the appetite craving, and the skin dry and harsh, with progressive emaciation. In less aggravated cases the constitutional symptoms are generally mild, and in some instances scarcely perceptible. The patient, however, generally complains of some degree of uneasy feeling in the præcordium, and a sensation of languor and feebleness in the muscles of the loins. I have seen two cases in relaxed, debilitated, and emaciated females, in which the urine seemed to consist almost wholly of albuminous matter, mixed with a small portion of chyle. In both these cases the urine changed to a jelly-like mass in the vessel after standing an hour or two. Prout has given an account of a similar case. "The first specimen of urine, voided in the morning," he says, "consisted of a solid jelly-like mass or coagulum, of a pale-amber colour." The second specimen, voided after breakfast, resembled the first in its general character, but exhibited a whey or slightly milky colour. The third specimen, voided in the evening, after an early dinner, was the most remarkable, and so closely resembled chyle in all respects, that it could scarcely be distinguished from this fluid.

Causes.—No age, it seems, is wholly exempt from the formation of chylous urine, although it occurs most commonly after the middle period of life, and in persons of an irritable habit of body, and impaired digestive powers from a previous course of free indulgence in the pleasures of the table, and in spirituous drinks. The exciting causes appear to be such chiefly as have a tendency to weaken and irritate the kidneys. Violent passions of the mind and protracted courses of mercurial remedies, are also accounted among the ordinary exciting causes of this disease.

Prognosis.—This complaint is not attended with much danger, and in its milder form may continue for many years without producing any very serious consequences. In the more aggravated cases of chylous urine, however, a great degree of languor and emaciation sooner or later ensues; and ultimately destroys life, either by the supervention of hectic, or a gradual and total exhaustion of the vital powers. One of the above named cases that came under my notice, terminated in phthisis pulmonalis.

The last variety of urinary disease I have to mention, is that

in which there occurs *an excess of the earthy phosphates in the urine.* This affection is by far more common and distressing in its consequences than either of the two preceding urinary complaints. Prout is, I believe, the first writer who has given a definite and circumstantial view of the phenomena and character of the urinary affections, characterized by a deposition of earthy phosphates from the urine. A preternatural copiousness of urine forms, in general, a conspicuous circumstance in this variety of the disease. In some instances, indeed, the quantity discharged is not inferior to that which occurs in the most perfect cases of diabetes. The urine is invariably pale-coloured; and, in many instances, it is perfectly colourless and pellucid. When this is the case, the quantity discharged is always very profuse, and deposites no sediment on being left to cool. Occasionally it happens that the quantity of urine is not much greater than natural; and in this case it is usually somewhat opake, and deposites a very copious pale-coloured sediment after standing awhile. In none of the kindred affections already considered, does the urine manifest so great a tendency to decomposition as in the present complaint. In a very few hours after being voided it becomes alkaline, and emits an extremely pungent and disagreeable smell. Connected with these morbid circumstances of the urinary secretion, there exists always a very great irritability of the general system, and an obvious derangement of the digestive functions. The patient is tormented with flatulency, nausea, costiveness, or diarrhœa; a sense of weight and oppression after taking food; variable and capricious appetite. "The stools are extremely unnatural, being either nearly black or clay-coloured, or sometimes like yest. These are always accompanied by more or less of a sensation of pain, uneasiness, or weakness in the back and loins. There is a sallow, haggard expression of the countenance; and as the disease proceeds, symptoms somewhat analogous to those of diabetes begin to appear—such as great languor, depression of spirits, coldness of the legs, complete anaphrodisia, and other symptoms capable of extreme debility." (Prout.)

Prout, to whom I am indebted for the foregoing description of this affection, asserts, that "a large proportion of those cases which have come under his own observation, were distinctly traced to *some local injury of the back*—such as a fall from a horse, &c. Among the general causes, he enumerates protracted depressing passions; excessive fatigue; and the most common local causes, besides the one already mentioned, are, some irritation about the bladder, or urethra, especially when of a chronic character—"such as a foreign substance introduced into the bladder, including all sorts of calculi; the retaining of a bougie or catheter in the urethra; strictures of the

urethra in particular constitutions;" and disease of the prostate gland.

When injury of the spine is the exciting cause of the disease, the prognosis may, in general, be regarded as unfavourable. Prout observes, that this affection "very rarely gives origin to calculus in the kidneys."

Treatment for diuresis with excess of urea.—Experience has shown that tonics, in union with opium and alkalies, constitute the most useful remedies in this variety of the disease. From one to two grains of quinine, with from twenty to thirty grains of the bicarbonate of soda, may be given three times daily, and an opiate administered in the evening. Much advantage may also be obtained from alterative doses of mercury. Three or four grains of blue pill, with one or two grains of ipecacuanha, should be given every other evening, or smaller doses may be given every evening. Gentle purgatives, too, are useful in this variety of the complaint. A mixture of magnesia and rhubarb will, in general, answer better than any other aperient in cases of this kind. The diet should be simple, unirritating, and digestible, and all kinds of stimulating drinks must be avoided. Some benefit will occasionally result from the use of lime-water and milk, in conjunction with the remedies just mentioned; but the principal object should be to establish the healthy action of the liver and digestive organs.

In *diuresis attended with an excess of phosphatic salts* in the urine, *opium*, according to the experience of Dr. Prout, is decidedly the best remedy we possess. The great object in this variety of the disease is to allay the general irritability which is so prominent a symptom in this affection. Where opium is objected to by the patient, we may resort to the use of hyoscyamus, in union with uva ursi, with considerable advantage. Two or three grains of the extract of hyoscyamus, with from twenty to thirty grains of pulverized uva ursi, should be given twice or three times daily, according to the urgency of the symptoms. I have, in several instances of this disease, employed the following pills with a most excellent effect.* Mr. Prout mentions a strong infusion of the *alchimilla arvensis* as a very useful remedy for the purpose of allaying the irritability of the bladder. When the irritability of the system is in some degree moderated by the narcotics just mentioned, tonics are more particularly proper—and of this class of remedies, the mineral acids, in conjunction with cinchona or quinine, are decidedly the most valuable in this affection. The nitric, or

* R. Extract. hyoscyam. ——
Pulv. camph. āā ʒss.
Mucilag. g. arab. q. s.
M. Divide into thirty pills. S. Take one four times daily.

nitro-muriatic acid, diluted in water, should be freely administered, and continued until the character of the urinary deposite is changed. When the mineral acids are disagreeable to the stomach, the citric acid may be employed; but this latter is not, in general, equal to the nitric, or nitro-muriatic acids. From one to two drachms of these acids, diluted in a sufficient quantity of water, may be taken daily. The diluted acid should be sucked through a glass tube or quill, to prevent the teeth from being injured. Ten grains of the extract of hyoscyamus may be dissolved in a pint of water, to which a drachm of the nitric acid is to be added, and which may be used in divided doses during the day. At the same time that acids are employed, it will be proper to keep down the general and local irritability, by the use of opium or hyoscyamus; and after the phosphatic condition of the urine has been, in a great measure, removed by the use of the acids, quinine and iron, in full doses, constitute the principal remedies.

Some benefit may also be obtained from local applications of a stimulating character to the loins—such as plasters of Burgundy pitch, galbanum, turpentine, or stimulating embrocations.

Active purgatives are injurious. Prout states, that he has known the most serious consequences brought on by a small dose of calomel, which, by inducing diarrhœa, and consequent debility, aggravated all the symptoms. Nevertheless, costiveness is almost equally injurious, and particular care should be taken to keep up a regular action of the bowels. This may, in general, be accomplished by the use of two or three Seidlitz powders, or small doses of castor oil, without the risk of inducing frequent and debilitating stools. Prout says, that mercury, in all its forms, is calculated to do much harm; and all alkaline remedies must be rigidly avoided.

The diet should be mild and nutritious. In general, the lean parts of tender meats afford the best food for patients affected with this variety of urinary disease. In some instances, however, a diet of this kind, from the very irritable state of the general system, renders the patient very uncomfortable during the period of digestion. In such cases, farinaceous, and particularly acescent vegetable articles of food, will usually answer very well.

CHAPTER XXIX.

LITHIASIS.

THERE is no subject in pathology which has of late years been more patiently and minutely investigated, than the secretion of sabulous matter with the urine, and its formation into calculous concretions. The latest and best works on this subject, are those of Dr. Marcet, Mr. Brande, and Dr. Prout; and it is to the excellent treatise of the latter chiefly, that I am indebted for the following facts and observations.

Urinary deposites.—There are three forms of urinary depositions, namely:

1. *Pulverulent sediments*—appearing on the sides and bottom of the vessels in which the urine is *left to cool*, in the form of a very fine sedimentous powder. These pulverulent depositions are usually of a red colour, inclining sometimes to a brown, and at others, to a yellow hue. In a general way, they may be stated to consist of two classes of calculous matter—namely, the *lithates* of soda, ammonia, and lime, constituting what are usually called, *lateritious* or *pink* sediments; and the *phosphates* of lime, magnesia, and ammonia, constituting the *white* sediments. These sediments exist in a state of *solution* in the urine, and are deposited only when it cools, or an acid is added.

2. *Crystallized sediments*, called gravel or sand, consisting of minute, irregular grains, *suspended* not dissolved in the urine; and of course sink to the bottom of the vessel almost as soon as the urine is voided. They consist of *lithic acid* nearly in a pure state; or of a *triple combination of phosphoric acid, magnesia, and ammonia;* or finally, of *oxalate of lime.* The first are red, the second white, and the third of a dark blackish green colour. These different varieties of *gravel* are never voided together in the same urine, though in the pulverulent state the two former often occur in union with each other.

3. *Solid concretions.*—These result from the gradual agglomeration of the two former varieties—forming what are termed urinary calculi. Of these concrete masses, Prout mentions thirteen varieties; but a description of these does not properly come within the scope of the present work, the *general* pathology and remedial management of the different lithic diatheses, being the objects to which the attention of the physician is more particularly called.

In relation to the comparative frequency of the different varieties of urinary deposite, it appears from the data collected

by Dr. Prout, that the *lithic acid* predominates in more than one-third of the whole number of urinary calculi; and it has moreover been ascertained, that lithic acid very generally constitutes the central nucleus, even in the other varieties of calculi. It would seem, therefore, that the deposition of lithic acid must be considered as the primary process in the formation of urinary calculi; and that the *phosphate* and *oxalate* formations are the result of a gradual transition from the lithic acid, to the phosphatic or oxalic diathesis. In the progress of this transition, the lithic acid deposition is in the first place changed into the *lithate of ammonia*, with a loss of the tinge derived from the colouring principle of the urine. After some time, this latter gives place to the deposition of sediment, composed chiefly of carbonate and phosphate of lime, and this is finally succeeded by the phosphates of lime and magnesia, in combination with ammonia. It is a curious circumstance in the pathology of lithiasis, that although the deposition of lithic acid or its compounds is very frequently followed by the phosphatic and earthy deposites, yet "it may be laid down as a general law, that in urinary calculi, *a decided deposition of the mixed phosphates is never followed by other depositions.*"

Notwithstanding the various forms and appearances which urinary calculi present, they may be classed under four heads, according as one or the other of the following elementary substances predominate; namely, 1. the lithic acid and its compounds; 2, the oxalate of lime; 3, the cystic oxide; and 4, the earthly phosphates. The abnormal conditions of the system which give rise to the secretion of these lithic substances, are with propriety distinguished as peculiar *diatheses;* and we accordingly have the *lithic acid diathesis—the phosphatic diathesis—the cystic oxide diathesis*—and *the oxalate of lime diathesis*, as the four cardinal points of attention in the pathology of lithiasis.

Lithic Acid Diathesis.

The urinary sediments which belong to this diathesis, are either pulverulent or crystallized. When the former is the case, they consist of some combination of this acid with an alkaline basis, generally ammonia; but when the deposite is crystalline, it consists *nearly of pure lithic acid.*

These *amorphous* sediments may be classed under three heads, corresponding to the colour which they possess, namely: the *yellow*, the *red* or *lateritious*, and the *pink* sediments.

The *yellow depositions*, varying from almost a white to a brown colour, consist of the lithate of ammonia tinged by the colouring matter of the urine. These are the sediments which occur in the urine of healthy, or slightly dyspeptic individuals, but when they occur in abundance, they indicate a tendency to

an excess of lithic acid and its consequences. Children are most subject to the yellow lithates in the urine.

The *red or lateritious*, varying from nearly a white to a deep brick-red colour, consists, like the former variety, of the lithate of ammonia, and sometimes of lithate of soda; deriving their red colour partly from the *purpurates* of soda and ammonia, and the colouring matter of the urine. The presence of the *red* colour of these depositions, or rather of the purpurates upon which this colour depends, may be regarded as a certain indication of a febrile or inflammatory condition of the system. To this, says Dr. Prout, "I have never seen a decided exception." In general, the deeper the colour or redness of the sediment, the more decidedly phlogistic is the condition of the system.

The *pink sediments* are much less common than the other two amorphous sediments belonging to this diathesis. "Like the other two varieties, they consist essentially of the lithate of ammonia," but they derive their colour exclusively from the purpurate of ammonia. The pink sediments are most apt to occur in chronic visceral inflammation, particularly hepatitis; and we frequently meet with it in dropsy, hectic fever, and in the more aggravated forms of dyspepsia. The sediments which occur in the sweating stage of remitting and intermitting fever, and during the favourable crisis of gout, rheumatism, and other febrile fevers, are of the lithic acid kind. Prout says, that in three instances he has seen a perfectly *white* lithate of soda deposited in the urine.

Of the causes which favour the excessive secretion of lithic acid or its compounds.—The circumstances which tend to produce a redundancy of lithic acid sediments in the urine, independently of general local inflammatory and febrile affections, are:

a. Errors in diet.—The mere excess of wholesome food; heavy, indigestible, irritating, or unwholesome articles of diet; taking full meals at unusual hours; in short, whatever resists or deranges the digestive powers will produce or increase the deposition of the lithate of ammonia. Prout says, that according to his observations, the articles most apt to give rise to this urinary deposite, "are animal substances, and more especially heavy unfermented bread, or compact, hard-boiled fat dumplings or puddings."

b. Excessive and unusual corporeal and mental exertions, or want of exercise, are accounted among the exciting causes of the lithic depositions in the urine.

c. Debilitating circumstances.—Whatever is capable of diminishing the vital energies has a particular tendency to give rise to urinary depositions of this kind. The depressing passions, want of nourishment, great fatigue of body or mind, &c. seldom fail to induce these sediments in the urine.

d. I have already referred to the frequency of the lithic acid

sediments in the urine of persons labouring under fevers of an inflammatory character; and particularly during the critical perspirations which occur in gout, rheumatism, intermitting and hectic fever, and in acute and chronic inflammation of the liver, as well as in various other affections attended with a phlogistic diathesis. In aggravated cases of dyspepsia, these urinary depositions are rarely wholly absent.

With regard to the exciting causes of the crystallized depositions, or the excess of uncombined lithic acid in the urine, different opinions have been expressed by the late writers on this subject. According to Majendie, the excessive secretion of this acid in the urine is very particularly favoured by articles of food that contain an abundance of *azote*, and, therefore, especially by *animal food*. This opinion is predicated on the facts, that azote enters into the composition of lithic acid, and that animals confined to food containing no azote, produce no lithic acid, whilst those which live almost exclusively on animal food (which contains an abundance of azote) secrete large quantities of pure lithic acid. Notwithstanding these plausible facts, however, later experiments and observations have afforded abundant evidence, that the formation of this acid in the urine, is independent of the quantity of azote introduced with the aliment, or at least that there are numerous other circumstances which favour or oppose the secretion of lithic acid by the kidneys. From a series of experiments performed by Dr. Philip with the view of elucidating this subject, he draws the following conclusions:

"1. That acid and acescent ingesta tend to increase the deposition of lithic acid from the urine, and to prevent that of the phosphates.

"2. That a diet composed of a large proportion of animal food, tends to lessen the deposition of lithic acid, and to increase that of the phosphates.

"3. That every thing which promotes the action of the skin tends to prevent the deposition of lithic acid, and to occasion that of the phosphates.

"4. That dyspepsia tends to increase the deposition of lithic acid, and to lessen that of the phosphates, both by producing acidity of the primæ viæ, and by rendering the skin inactive.

"5. That indolence has the same tendency, both by inducing dyspepsia, and by lessening the activity of the skin in proportion as it impairs the vigour of the circulation.

"6. That an acid passes off by insensible as well as sensible perspiration."*

It appears from the observations of Dr. Prout, that certain unknown circumstances connected with the *age* of the patient

* Medical Transact. of the College of Physicians of London, vol. vi. art. 9.

modify, in no inconsiderable degree, the influence of the ordinary causes of an excess of lithic acid in the urine, as well as the constitutional symptoms which attend the active state of this diathesis. Thus, children born of gouty and dyspeptic parents, "are exceedingly liable to lithic acid deposites in the urine." Such children are very apt to manifest a frequent desire to pass urine, with very small discharges, and evident pain or uneasiness during and immediately after micturition. If on examination the urine is found to be charged with this sediment, immediate means should be used to counteract the diathesis, "as there is much greater risk at this period of life than at any other, of the formation of stone in the bladder."

There seems to be less disposition to the formation of lithic acid deposites between the ages of puberty and forty than at any other period of life. There is less risk too, says Prout, of the formation of urinary calculi between the ages just mentioned, than at other periods; for except in cases attended with an extremely copious secretion of this acid, it almost all passes off with the urine in the state of gravel.

Between forty and forty-five years of age, the constitutional habit of body, in most individuals, undergoes a considerable change; and concomitantly with this change, the lithic acid diathesis is frequently very strongly developed. Not only do we, in general, find persons who have passed this stage of life secrete much larger quantities of lithic acid, or its compounds, than previously, but there appears to be a manifest disposition in the constitution at this period, "to separate the acid in a concrete state,—thus giving origin to the formation of renal calculus," and the consequent train of various distressing secondary symptoms.

The general symptoms which usually accompany an excessive secretion of lithic acid, are—pain and uneasiness in the region of the kidneys; a sensation of irritation and heat at the neck of the bladder, and in the urethra; a frequent desire to void urine, "which is passed in small quantities at a time, and without affording the usual relief, the sensation still continuing as if some urine were left behind in the bladder." Dyspeptic symptoms—particularly acidity and flatulency in the *primæ viæ*, are among the most common symptoms of the lithic acid diathesis.

Phosphatic Diathesis.

The phosphatic deposites from the urine are generally *amorphous*, though occasionally they appear also in a crystallized form. The deposition of the phosphates rarely occurs as an original affection, being almost universally consequent "to the other forms of urinary deposition, and more especially the lithic acid and oxalate of lime."

The crystallized phosphatic sediments consist, almost universally, of the triple phosphate of magnesia and ammonia. In connexion with the appearance of this sediment in the urine, which is of a yellowish white colour, the patient generally complains of dyspeptic symptoms, *general nervous irritability*, some pain and uneasiness in the loins, lassitude, and want of mental energy. The urine is generally copious and pale, and when suffered to stand awhile, becomes covered with an iridescent pellicle, consisting of minute crystals of the ammoniated phosphate of magnesia. The urine is very apt to enter into the process of decomposition, and to become alkaline and putrescent. Sometimes this crystallized deposite is formed immediately after the urine is voided; but more commonly the crystals do not appear until the urine has become cool, or begins to putrefy.

The amorphous phosphatic sediments are always composed of a mixture of phosphate of lime, and the triple phosphate of magnesia and ammonia—the former constituting by far the greater proportion. Some writers of eminence maintain that these sedimentous matters are not separated from the blood by the kidneys, but wholly and exclusively by the inner coat of the bladder, from a peculiar morbid condition of this structure. Prout admits that the phosphate of lime is sometimes derived, in part, from the mucous membrane of the bladder—but he doubts, "if any portion of the triple phosphate is ever derived from this source," the kidneys being, according to his observation, the only source from which it proceeds.

The general symptoms which accompany an habitual and copious deposition of the amorphous phosphates from the urine, are often peculiarly distressing. The general system, both physical and mental, is almost always extremely irritable; and great derangement of the digestive organs, manifested by flatulency, nausea, constipation, or exhausting diarrhœa; extremely variable and unnatural stools—being black, or whitish, and sometimes resembling yest—accompanied with a dull aching pain, and a peculiar feeling of weakness in the loins. The countenance, in aggravated cases, becomes sallow and haggard, "and as the disease proceeds, symptoms somewhat analogous to those of diabetes ensue, such as great languor and depression of spirits, coldness of the legs, complete anaphrodisia, and other symptoms of extreme debility." The urine is pale and often very copious.

With regard to *the causes* of the urinary sediments, composed of phosphates, writers have expressed some difference of opinion. Dr. Marcet, and M. Brande, maintain that the use of alkaline remedies, when continued for some time, has an especial tendency to give rise to the phosphatic depositions, and this opinion has been particularly acted on in the remedial treatment

of urinary disorders of this kind. Dr. Prout, on the contrary, considers this tendency of alkaline remedies as very trifling, and scarcely worth attention, either in an etiological or therapeutic point of view. The occasional causes of the present variety of urinary deposites, are either of a local or general character. Injury of the back, as a blow or fall, says Dr. Prout, is a very common source of this affection; and its occurrence is also particularly promoted by excessive fatigue, and the protracted influence of debilitating mental emotions. *Irritations about the neck of the bladder or urethra*, from whatever source they may proceed, particularly when operating for a considerable length of time, have an especial tendency to give rise to the secretion of phosphatic sediments, and hence the presence of a small uric calculus in the bladder very frequently becomes surrounded by a mass of urinary phosphates—so as to present the character of a phosphatic calculus externally, whilst its central portion, or nucleus, consists of lithic acid, or of the lithate of ammonia.

Treatment.

Treatment for the lithic acid diathesis.—To counteract the excessive secretion or formation of lithic acid depositions from the urine, our principal aim must be to establish the healthy action of the digestive organs. For this purpose, we must in the first place adopt proper dietetic regulations; for without an especial attention to this point, little or no benefit will be derived from any other remedial measures. The patient must be put on a plain, digestible, and nourishing diet, and be particularly cautioned against taking very full meals. "An error in *quantity* of diet is infinitely more important," says Dr. Prout, "than an error in *quality* in relation to the diet." Indigestible, mixed, and irritating articles of food, particularly fresh and unfermented bread, solid farinaceous preparations, salted and dried meats, and *all kinds of acid drinks and acescent aliment* must be carefully avoided.

At the same time that attention is paid to the diet, it will be proper to use means for the purpose of correcting the secretion of the liver and alimentary canal, and to keep up a regular action of the bowels. With this view, mild aperients, followed by alkaline medicines, in union with weak infusions of some of the usual bitter vegetable tonics, are particularly beneficial. One of the following pills may be taken every second or third evening, until the hepatic and intestinal functions are restored to a healthy condition.* If they do not procure one or two

* R. Mass. pil. hydrarg. ʒi.
G. aloet. sacc. gr. xvi.
Tart. antimon. gr. iss.—M. Divide into 16 pills.—Or,

full evacuations on the following morning, a small dose of magnesia, or one or two Seidlitz powders may be administered, to promote their operation. The regular use of *alkaline* remedies is of particular importance in the remedial management of this diathesis. From fifteen to twenty grains of magnesia, taken in a glass of soda water, will often answer this purpose very well. The bi-carbonate of soda, too, is an excellent alkaline in such cases.* From one to two drachms, dissolved in a few ounces of a very weak infusion of colomba or gentian root, may be taken three or four times daily. Twenty or thirty drops of the liquor potassæ may also be employed.

It appears from the experiments and observations of Dr. Philip, that the regular action of the cutaneous exhalents tends very considerably to lessen the deposition of lithic acid from the urine; and he observes, that the lithic acid is much more effectually thrown off by the cutaneous exhalents, when merely the insensible exhalation from the skin is augmented, than when the sensible perspiration is increased. The action of the skin should therefore be duly supported by regular exercise, the occasional use of the warm bath, small doses of the pulvis antimonialis or tartar emetic, and the wearing of flannel next the skin.† Prout says, that warm sea-bathing is sometimes "particularly beneficial, though occasionally the gravelly deposite seems to be increased under its use;" which latter circumstance he ascribes "to the use of the hard waters that generally prevail along the coast;" for the use of such water is especially injurious in the lithic acid diathesis.

In cases accompanied with a general irritable state of the system, or much irritation in the urinary organs, narcotics should be used—particularly opium and hyoscyamus. Although a regular action, and even a moderate degree of looseness of the bowels is particularly desirable in the management

R. Calomel gr. iv.
Pulv. antimonialis gr. vi.
Extract. colocynth. compos. gr. vi.
Extract. hyoscyam. gr. iii.—Divide into 4 pills. Take one at bed-time, twice or thrice a week; and followed the next morning by an active dose of the sulphate of magnesia.

* This preparation, usually called *sal æratus*, (potassæ ærata,) is made by dissolving half a pound of the sub-carbonate of potass in ten ounces of water, adding two ounces of sub-carbonate of ammonia; after it has effervesced, it is crystallized.

† Dr. Philip observes, that "the effects of Dover's powder on the urine are transitory, apparently ceasing as soon as the sweat ceases to flow. But those of the tartrate of antimony may generally be perceived for several days after it is taken, during which it still seems to lessen the tendency of the urine to deposite lithic acid. I have also repeatedly observed, that the deposition of lithic acid was not so effectually prevented by tartrate of antimony when it produced nausea, as when no sensible effect was experienced from it.—*Loc cit.* p. 202.

of this affection, care should be taken not to employ very active purgatives. About the age of forty, a particular tendency is apt to occur to rid the system of the cause of constitutional irritation in this diathesis, in consequence of which, the kidneys secrete an unusual quantity of lithic acid, "and by this process give great relief to the system at large." It is thus that diuretics are often particularly servicable at this period of life; which, favouring the secretion of large quantities of lithic acid, and thus causing a kind of artificial crisis—frequently give great relief to the constitution. Prout says, that muriatic acid, in union with opium, will often answer very well for this purpose; and Dr. Henry has known a combination of turpentine and laudanum to "bring away several ounces of lithic acid in the course of a day or two." For this purpose we may also have recourse to various vegetable diuretics with occasional benefit—particularly the infusion of *monarda punctata*, of *erigeron heterophyllum; alchemilla arvensis; sem. daucus carota*, and of *galium aparine*. When the kidneys are in a state of high irritation or inflammatory excitement, these diuretics must be employed with great caution; and it would seem, also, that they are "not adapted to any other species of deposite than crystallized lithic—nor even to this form of the disease, when it occurs in very young or very old subjects."

In what is usually called *a fit of the gravel*—an affection which "consists in the secretion of a large portion of lithic acid by the kidneys," preceded, as well as accompanied, usually, by general constitutional irritation and febrile movements, the treatment does not differ materially from that which has already been described, "except that it must be more active." Thus venesection, cupping, or leeching from the region of the kidneys, and active mercurial purges with antimonial powder, ought to be efficiently employed *before* diuretic remedies are prescribed. The warm bath, or warm fomentations applied to the loins, in conjunction with the less stimulating diuretics just mentioned, with the addition of colchicum, will seldom fail to procure considerable relief. A strict antiphlogistic regimen is indispensable, and after the attack is over, the patient should adhere strictly to the dietetic rules mentioned for counteracting the lithic diathesis.

Treatment proper in the phosphatic diathesis.—It was before stated, that a peculiarly irritable state of the system is one of the most constant, and in general the most distressing circumstance attending the completely developed form of the *phosphatic diathesis*. An important indication, therefore, is to diminish this unnatural irritability and to restore the general health of the system, at the same time that measures are adopted to correct the morbid condition of the urinary organs. *Opium*, according to the experience o Dr. Prout, is the only

beneficial remedy for allaying the morbid irritability of the constitution; and it should be given in large and repeated doses—from one to five grains three times daily, according to the urgency of the symptoms. After the irritable state of the system has been in some degree reduced by the use of this narcotic, recourse should be had to tonics—particularly to the mineral acids, cinchona, the ferruginous preparations, uva ursi, &c. The acids are not only beneficial by their general tonic influence, but they tend also in a direct manner to lessen the alkaline character of the urine. Where the mineral acids disagree with the stomach, the citric acid should be used.

Local applications to the region of the kidneys—such as a large pitch, soap, or galbanum plaster; and in very severe cases, setons or issues in the back, will often assist considerably in mitigating the violence of the symptoms. Active purgatives are apt to prove injurious; and the *saline* purgative remedies, particularly those that contain a vegetable acid, are said to be improper in this affection. "Mercury in all its forms, and particularly when pushed so far as to produce its specific effects on the constitution, seems capable of doing a great deal of mischief." If small alterative doses of this medicine are particularly indicated, they should be given in union with opium. All alkaline remedies must be especially avoided; and diuretics of every kind are almost equally improper in the phosphatic diathesis. Hard waters, used as drink, "are literally poison in this form of the disease." The drink should be distilled, or the softest water that can be procured.

In moderate cases, where the irritation is confined chiefly to the urinary organs, *hyoscyamus* in union with *uva ursi*, with now and then small doses of opium, should be administered. In cases of this kind, I have known much benefit derived from taking half a pint to a pint of a weak infusion of the *monarda punctata* during the day. Prout speaks very favourably in the slighter cases of this affection of the employment of an infusion of *alchemilla arvensis*.

The diet should be digestible, mild, and nourishing—such as the lean parts of the most tender kinds of meat. Some writers direct the use of an acescent vegetable food, but Dr. Prout is inclined to prefer an animal diet. Much, of course, will depend on the state of the stomach, in relation to the propriety or impropriety of these different kinds of food. When the irritation of the mucous membrane is great, animal food will in general be found too stimulating; and, on the other hand, the greater digestibility of this kind of diet renders it decidedly proper where the digestive powers are weak, with an absence of mucous irritation of the stomach.

A tranquil state of the mind has a most important curative influence. "The influence of mental anxiety," says Dr.

Prout, "is really astonishing in this disease; and absence from care, the exhilarating air of the country, and such exercises as are consistent with the patient's condition, will, perhaps, more than any thing else, contribute to the cure, particularly in the slighter cases, and when the cause is not local injury."

ISCHURIA RENALIS.

Suppression of urine is always a very formidable affection, whether it occurs as an idiopathic malady, or secondarily, in the course of other diseases. This affection must not be confounded with mere *retention of the urine*. In ischuria the functions of the kidneys are more or less suspended or destroyed, the secretion of urine being either morbidly diminished, or entirely suspended. In *retention* of the urine, on the other hand, the urine is regularly secreted by the kidneys, and conveyed into the bladder; but from some cause or other, an inability to evacuate it occurs, and being thus retained, it gradually accumulates, until, in some instances, the most distressing, and even fatal consequences occur.

Ischuria renalis may be partial or complete. In the former case, very small portions of urine are from time to time discharged from the bladder, under symptoms often extremely distressing. The patient is harassed with a very frequent desire to pass off the urine, accompanied with more or less uneasiness or pain, and a sense of dull, heavy weight in the iliac region, and in some cases much pain and tenderness throughout the whole lower part of the abdomen, together with great anxiety of feeling, nausea, vomiting, and occasionally hiccough. In almost all instances of urinary suppression, febrile symptoms are conspicuously present. The thirst, too, is usually urgent, and where the suppression is complete, and continues for some time, patients often complain of a distinct urinous taste in the mouth, and the whole surface of the body, in most instances of an obstinate character, exhales a very perceptible urinous smell. In cases of this affection, attended with the foregoing symptoms, the suppression is, no doubt, always the immediate consequence of high irritation or inflammatory action in the kidneys. Suppression of urine is not, however, always attended with the painful symptoms just mentioned. In some cases, although but very little or no urine whatever is secreted, the patient experiences neither pain, nor weight, nor any particular uneasiness in the region of the kidneys and bladder. Sir Henry Halford has related five cases

of this kind.* Cases of this kind would seem to depend on total *paralysis* of the kidneys. Whatever may be the immediate cause of the suppression, however, or with whatever phenomena it may be accompanied in its early stage, symptoms of cerebral oppression never fail to ensue, if the disease continues for two or three days, and often in the course of thirty hours, if the urinary secretion is not in some degree restored. Indeed, one of the most singular circumstances attending this disease, is the inevitable tendency to *coma and effusion in the brain.* In cases of complete suppression, depending on paralysis of the kidneys, and where little or no uneasiness is experienced in the abdomen or urinary organ, the patient, in the course of the second or beginning of the third day, gradually sinks into deep coma, and dies in a state of complete stupefaction. Mr. Abercrombie, in an interesting paper on this affection, has related five cases, all of which terminated in this way.† Where inflammatory action of the kidneys is the proximate cause of the suppression, the coma is frequently preceded by delirium, and in some cases, convulsions finally ensue.

I have already adverted to the strong urinous smell of the perspiration which occurs in the latter periods of this complaint ;‡ and it appears from various cases that have been published, that a vicarious secretion of urine sometimes, though indeed very rarely, takes place from particular organs or parts—more especially from the umbilicus. Dr. Hastings has related a most interesting case of ischura renalis, in which, many days after the commencement of the disease, considerable quantities of urine were discharged from the umbilicus, for three days in succession.§ Dr. Hastings refers to some of the older writers for accounts of similar cases. Schenk relates two instances of this kind ;‖ and a case is recorded by Sennertus, as having occurred under the observation of the celebrated Platerus, in which, in consequence of a total inactivity of the kidneys, a urinous fluid was copiously discharged from the right ear.¶ Instances of this complaint are on record also, in which

* Onthe Ne cessity of Caution in the Estimation of Symptoms in the last Stage of some Diseases.

† Edinb.Med. and Surg. Journal, April, 1821.

‡ Dr. Yeates, (Med. and Phys. Jour. No. 29,) relates instances of ischuria, in which the secretion of a urinous fluid by the skin was noticed; and Sauvage mentions a case, in which this phenomenon was distinctly observed.

§ Midland Medical Reporter, No. 4.

‖ One of these cases was in a female. "Cum suppressa per multas dies fuisset urina tandem per umbilicum urinam profluit."—Obs. Lib. iii. de Urina, p. 489, as quoted by Hastings.

¶ Puellæ cuidam annos natæ tredecim cùm aliquando copiose minxisset, urinam subito suppressam esse atque tunc aquam serosam ex aura dextra adeo affatim cæpisset effluere, ut una vice duæ sæpe emanarint idque dies aliquot.—Sennerti. Opera. Lib. iii. p. viii. s. ii. cap. ix.—Hastings.

a fluid resembling urine was copiously discharged by vomiting, and by stool. Valisneri has given an account of a case of ischuria, in which copious discharges of a urinous fluid occurred from the stomach. Water is always found more or less abundantly effused into the cavities of the brain, and has, in general, a very perceptible urinous smell.

Causes.—The immediate cause of the suppression of urine may be either *inflammation*, or paralysis of the kidneys, or mechanical obstruction. Nephritis is always attended with a more or less perfect suppression of the secretion of urine, but as both kidneys are very rarely inflamed at the same time, there is, in general, a sufficient quantity of this excrementitious fluid separated from the blood, by the sound kidney, to obviate any particular danger from this source. Of course, whatever is capable of causing much irritation, or inflammation of the renal organs, may become the remote cause of this affection. Schenk relates a fatal case, which was caused by a blow on the loins, and on post mortem examination, a considerable abscess was discovered between the muscles contiguous to the kidneys. Lœlius a Fonte has recorded a case, in which the left kidney was gangrenous; and in several cases related by Hildanus and Bonetus, the kidneys and neigbouring parts were extensively inflamed.* The suppression of hæmorrhoids and of the menses has been known to give rise to this affection; and its occurrence from gouty irritation has been frequently noticed. Dr. Prout observes, that when there are no signs of renal inflammation present, "and the patient has been subject to gout, or if a female, to hysteria, the ischuria may be supposed to depend, in part at least, on spasm." The healing up of old ulcers, has also given rise to total suppression of the urine. A very remarkable case of this kind is related by M. Dupont, physician to the *Hospice de Gournay*, in which a lady, who had an ulcer on one of her legs of twenty-five years continuance, which was quickly healed by an ointment. Soon after the ulcer was cicatrized she was seized with pains in the abdomen, attended with nausea, some fever, red and dry tongue, and abdominal distention. An almost total suppression of urine speedily ensued. After a few days continuance and ineffectual treatment, a blister was applied over the cicatrix of the ulcer, and the patient was speedily freed of her disease. The sudden application of cold to the body, particularly during the flow of the menses, has occasionally given rise to fatal ischuria. The case related by Hastings, mentioned above, was produced in this way; and one of the cases of suppression from renal paralysis, mentioned by Sir H. Halford, was excited by the influence of cold while the patient was under the influence of mer-

* See Dr. Abercrombie's Memoir, already referred to.

cury. It would seem, moreover, that ischuria from paralysis of the kidneys, is, in some instances, a nervous affection, depending on a disordered state of the brain or of the nerves. "The presence of a mechanical cause may be suspected," says Dr. Prout, "when the person has been previously subject to calculous affections. Generally, however, in this latter case, the effects cannot be ascribed altogether to the simple operation of the *mechanical* cause, but in part also to the inflammation or spasm, or both, which it is liable to produce, and the affection thus assumes a mixed character." A fatal case of this disease is related by Dr. Teeling, which occurred in a very gouty individual. On post-mortem examination, the right kidney was found diminished in size, and the cavity of its pelvis filled with gray-coloured, rough calculi, about the size of small peas, and the whole internal surface of the kidney was "firmly coated over with a fine gravel, resembling pulverized free-stone." In the upper part of the ureter, belonging to this kidney, a calculus was found as large as a small almond, which blocked up its cavity." Some calculi were also found in the pelvis of the left kidney.

Prognosis.—The prognosis in ischuria, is always extremely unfavourable. So long as the suppression is not complete, a reasonable hope may be entertained of an eventual recovery; for even a small secretion of urine by the kidneys, will in general keep off the more alarming symptoms of cerebral oppression for a considerable time, and give greater opportunities for subduing the renal affection. When the suppression is complete, however, the disease almost always terminates fatally in the course of four or five days, and often as early as the third day. Sir Henry Halford, in the paper already quoted, states, as the result of his observations, that a *complete* suppression of the secretion of urine cannot continue beyond three days without terminating fatally. This, however, is incorrect. Dr. Laing has related an instance where the secretion of urine was suspended for nine days, and nevertheless terminated favourably;* and Dr. Brown mentions one case in which the secretion was suspended for six days and six hours, and in another, the suppression continued eleven days, yet both patients recovered.† A very extraordinary instance of this complaint is described in Hufeland's Journal for August, 1827, in which the action of the kidneys was wholly suspended for seven weeks, without any particular inconvenience, although no urinous fluid was secreted vicariously.

Treatment.—The treatment in this affection must be modified, according to the particular morbid condition of the kid-

* Edinb. Med. and Surg. Jour. vol. x.

† Essays, &c. on Medical Subjects. See Med. Chir. Rev. Dec. 1828.

neys, as well as according to the nature of the remote cause. When symptoms of renal inflammation are present, the treatment already pointed out for the cure of *nephritis* is to be energetically pursued. Venesection, cupping, leeching, the warm bath, purgatives, emollient enemata, sinapisms, and even blistering over the region of the kidneys, constitute the principal remediate measures. In cases attended with no decided manifestations of an inflammatory action in the kidneys, *diuretics* are the medicines upon which our chief reliance must be placed. In general, the stimulating articles of this kind have been found most beneficial—more especially where the disease appears to depend wholly on a torpor or paralysis of the kidneys. Spirits of turpentine, both in the form of injections, and internally in doses of from twenty to thirty drops every two hours, has been employed with a very good effect. When the bowels are constipated or inactive, the turpertine should be given in union with castor oil, in doses sufficient to procure pretty free purging. The remarkable case mentioned above from Hufeland's Journal, was cured by a mixture of oil of amber, Venice turpentine, and balsam copaive, after a great variety of other medicines had been ineffectually applied. I have seen two cases of incomplete suppression attended with a somnolent tendency, in nervous females, which were removed by a mixture of juniper oil, sweet spirits of nitre, and laudanum.* Mercury has been recommended for the use of this affection, and some interesting cases have been reported, illustrative of its beneficial influence. In the case already referred to, related by Dr. Brown, mercury was freely given, and he states, that very soon after the mercurial fetor of the breath was noticed, a pretty copious discharge of urine ensued, and the patient recovered. Valisneri also gives an account of a case which was cured by mercury. In Dr. Laing's case, which, however, was manifestly attended with both local and general inflammatory action, the remedies employed were blood-letting, repeated three times daily, saline diuretics, and the warm bath. Mr. Raymond strongly recommends the application of a large blister across the region of the kidneys. He has related several cases in which the flow of urine soon followed vesication over the loins, after a variety of remedies had been ineffectually employed.† Lieutand recommends *emetics* for the cure of ischuria renalis.‡

* R. Ol. juniper ℥ss.
Spir. nit. dulc. ʒi.
Tinct. opii ʒi.—M. Take a tea-spoonful every 2 hours.

† Med. Obs. and Inquir. vol. v. Appendix.

‡ Nonullos enim decumbentes et cum morte colluctantes hocce præsidiis tempestive adhibito ex orci fancibus ereptos vidi.—*Synop. Prox. Med. Com.* i. p. 269.

RETENTION OF URINE.

Retention of urine is by no means an uncommon affection; and though not in general so dangerous and difficult of being cured as ischuria, yet it is often met with under circumstances which render it a most alarming malady.

The *immediate cause* of retention of urine, consists either: 1, in a loss of the expulsive power of the bladder and of its detrusor muscles; or 2, in mechanical obstruction of the urethra, or neck of the bladder.

1. *Paralysis or loss of the expulsive power of the bladder*, very generally arises from over-distention of this viscus. After the middle period of life, the sensibility of the bladder, in some individuals, gradually diminishes as age advances; and this insensibility occasionally becomes so considerable, that the urine fails more and more to impart the due degree of stimulus to the bladder; in consequence of which it is often suffered to accumulate inordinately, before the desire to evacuate it is experienced. The bladder then, from its torpid and relaxed condition, is incapable of completely expelling its contents, and the action of the abdominal muscles is called into aid to effect this purpose. From this deficiency of the expulsive powers, the bladder is not entirely emptied; and more urine is daily left in the bladder, until at last, only a small portion of its contents is evacuated at each attempt to urinate. Finally, either from the supervention of some slight general indisposition from cold, or some adventitious local affection, as diarrhœa, suppressed hæmorrhoids, riding on horseback, fatigue from exercise, &c. a total inability in the bladder, even with the aid of the abdominal muscles, to overcome the ordinary power of the sphincter ensues, and complete retention of the urine is the consequence.

Retention from paralysis is not, however, entirely confined to old people, and may arise from blows or falls on the back; injury of the spine; excessive onanism; and it occurs sometimes in paraplegia, and in the latter stage of typhus, and other forms of low fever.

This variety of the disease is readily distinguished by the facility with which the catheter may be introduced, as well as the general course and progress of the complaint. No symptoms indicative of a mechanical obstruction of the urethra, or of inflammation, precede or accompany the disease. The approach or tendency to the complaint is indicated by the stream of urine, though sufficiently large, becoming weaker and weaker. The patient is obliged to stand a long time, and to make considerable effort with the abdominal muscles, before the urine

begins to flow; and the quantity discharged gradually becomes smaller and smaller, whilst the desire to urinate becomes more frequent and urgent.

Retention from paralysis of the bladder, is much less alarming and dangerous in its consequences, than when the retention occurs from inflammation or obstruction; but it often continues for many months. I have known several instances, apparently of spontaneous occurrence, in which the daily use of the catheter was necessary for three months before the bladder regained sufficient expulsive power to discharge its contents. This form of the disease is not in general attended with much suffering, unless the urine be suffered to accumulate until the bladder becomes very greatly *distended*. Indeed, cases sometimes occur in which the patient is not even aware that a retention of the urine exists; since the bladder may gradually become enormously distended, and give rise to more or less uneasiness, although more or less urine is regularly discharged at each attempt to urinate. Instances of this kind, have even been mistaken for abdominal dropsy; for when the discharge of urine, though in diminished quantities continues, the abdominal distention and uneasiness may, on a superficial examination, be readily ascribed to dropsical effusion.

A case is mentioned as having occurred in St. George's Hospital, where the patient was thought to be labouring under ascites. Paracentisis abdominis was in contemplation, "when the house-surgeon happened to introduce a catheter, and drew off many quarts of water with immediate reduction of the abdominal swelling."* Similar instances are mentioned in the article on this affection in the *Dict. des Sciences Medicales*. A woman was supposed to be affected with ascites, and tapping was determined on, at the same time that diuretics were diligently employed: finally, from a temporary complete retention of the urine, the catheter was introduced, and a large quantity of water drawn off. The abdominal swelling soon disappeared. Another case is related in which retention of the urine was mistaken for dropsy, which, after various ineffectual measures to remove, the supposed dropsical disease was speedily cured by the use of the catheter; and an instance is mentioned in the same work, where the patient died from rupture of the bladder—the patient having been treated for ascites. Dr. Felici of Milan, has related the case of a woman who considered herself pregnant. She laboured under œdema of the feet; enormous swelling of the abdomen; violent and painful efforts to void urine, which passed off in small quantities; pains in the thighs; dyspnœa; palpitations; a sense of suffocation from the slightest motion; puffiness of the face; frequent pulse; and

* Med. Chir. Rev. April, 1825—p. 523.

a dry cough. Under these symptoms she had laboured a considerable time before Dr. F. saw her. He suspected retention of urine. The catheter was introduced, and nearly *fourteen pints* of water drawn off.

2. *Retention of the urine from inflammation.*—Inflammation of the urethra and bladder is one of the most common causes of retention of the urine, and may be determined by a great variety of causes—such as irritation from calculus; irritating diuretics, particularly terebinthinate remedies and cantharides; gonorrhœa; stimulating injections into the urethra; the incautious introduction of the catheter or bougie; the spread of inflammation from neighbouring parts; an acrid or irritating state of the urine; the sudden suppression of perspiration from the action of cold; cold and damp feet; the suppression of hæmorrhoids and the catamenial discharge; excessive venery and onanism; mechanical injuries received on the pubic region or upon the perineum; general fever and constitutional irritation; metastasis of gout and rheumatism, &c. When the neck of the bladder or urethra is inflamed, the penis is usually somewhat enlarged and tender to the touch, and when the exciting cause consists of culculous irritation, considerable pain is usually experienced in the glans penis.

Cases depending on inflammation are attended with severe burning pain in the neck of the bladder, with tenderness to pressure of the perineum and the parts immediately above the pubis. The desire to evacuate urine is very frequent, and extremely urgent and painful. Fever is an early attendant; and the patient is apt to experience nausea and occasional vomiting. All attempts to introduce a catheter or bougie give rise to excruciating pain. It must, nevertheless, be observed that the inflammation upon which the suppression depends, is not always seated in the bladder or urethra, but sometimes in the parts contiguous to this viscus. Thus, retention of urine may arise from inflammation of the rectum, by causing high irritation and vascular engorgement of the mucous membrane of the bladder and urethra, or spasmodic constriction of the urinary passage; or finally, the inflammation may spread to the detrusor muscles, and destroy their powers of regular action. *Chronic inflammation* of the mucous membrane of the bladder is very frequently attended with dysury, strangury, or *retention* of urine. Retention from this cause is most commonly met with in old people; and in such as have laboured under protracted and badly managed gonorrhœa; or in individuals affected with vesical calculi. It may also arise from metastases of gout and rheumatism; hæmorrhoidal irritation; and repelled chronic diseases of the skin.

The diagnosis of retention from chronic inflammation and vascular engorgement or tumefaction of the mucous membrane

of the bladder, is often attended with considerable difficulty. In general, a sense of tickling and uneasiness is at first experienced in the bladder, extending some distance into the urethra. After some time an almost constant gnawing pain is felt in these parts, with more or less difficulty of voiding the urine; and in some instances a temporary incontinence of urine alternates with dysury. The urine discharged contains a large quantity of very viscid mucus, mixed sometimes with considerable portions of purulent matter. In this state the disease may continue for a long time, with an occasional attack of more or less obstinate and painful retention of the urine. In such instances the whole bladder, on dissection, is usually found contracted, so as not to contain more than half a pint of water, with its coats greatly thickened and indurated, and the internal surface varicose, or covered in parts with concretions of the urinary phosphates. Sometimes ulcers of various sizes, warty excrescences, and a pustular eruption occurs on the mucous membrane. Retention of urine, from causes of this kind, may be distinguished from enlargement or disease of the prostate or stricture near this gland, by the very gradual progress and increase of the difficulty of passing the urine; and particularly by the slight difficulty which is in general encountered in introducing the catheter; and, finally, the occasional temporary incontinence of urine, which in many instances occurs. Sœmmering states, that chronic inflammation and the consequences just mentioned, are almost invariably attended with a very peculiar uneasiness and numbness of the thighs, amounting in some instances to a state of incomplete paralysis.

The prognosis in such cases is always very unfavourable, more especially when there is reason to suspect structural lesion of the bladder.

3. *Spasmodic retention of urine.*—In cases of this kind, the retention occurs suddenly. The patient is seized with extremely painful and urgent efforts to void urine; but only a few drops pass off under great suffering. The pain in the bladder is cutting, and attended with a sense of constriction and pressing down, which by females is often compared to the pains of parturition. The urethra is sensible, sometimes painful throughout, and attended often with very distressing erections. The pain is not increased *during the flow* of the small quantities of water that occasionally pass off; but immediately after the last drops are expelled, it becomes very severe, with a very sensible spasmodic contraction in the perineum. In this way it may continue for a longer or shorter time, until at last the pain and urgency to urinate, pass off by a considerable flow of urine. The pain in this variety is not constant, nor is it increased by pressure on the perineum, or pubic region. There

is no fever, but the pulse is small and contracted. The catheter is usually passed with great difficulty, and often it cannot be introduced into the bladder at all.

Spasmodic retention does not, however, often occur as a purely spasmodic affection. In many instances, slight inflammation of the bladder, or in some neighbouring part, render the neck and upper portion of the urethra so extremely irritable, that the stimulus of the urine causes the sphincter to contract spasmodically. The spasm may also be excited by mechanical irritants. This variety of the disease is most apt to occur in irritable and nervous individuals, and such as are predisposed to colicky affections. In some instances it is suddenly excited by mental emotions, particularly terror and grief. Gouty and rheumatic irritation; irritation in the rectum from ascarides, and other causes: cold and humidity, particularly when applied to the feet; irritating diuretics; hæmorrhoidal irritation; gonorrhœa; stimulating injections, by heightening the irritability of the bladder and sphincter muscles, are often the remote causes of spasmodic retention of the urine.

This variety of the disease is not in general attended with any particular danger or obstinacy. By frequent recurrence it is, however, liable to terminate in inflammation, and thus ultimately to give rise to very serious consequences.*

4. *Retention from mechanical obstruction of the urethra or neck of the bladder.*—Obstruction to the discharge of the urine may depend on a calculus lodged in the bladder, or impacted in the urethra; stricture, more or less permanent, of the urethra; enlargement and induration of the prostate gland; thickening and induration of the mucous membrane of the urethra; pressure from tumours in the neighbouring parts, or from the gravid uterus, retroverted, or prolapsed uterus; foreign bodies accidentally introduced into the bladder; polypi and fungoid tumours in the bladder; very viscid mucus and coagula of blood clogging up the urethra; hernia; and a varicose state of the vessels of the neck of the bladder. Of all these causes, however, stricture and calculi lodged in the urethra, are incomparably the most common causes of obstruction.

Retention of the urine, from whatever cause it may arise, becomes highly alarming, if it continues beyond twenty-four hours without being in some degree relieved. In general, complete retention of urine proves fatal in four or five days; and I have known an instance which terminated in gangrene and effusion of the urine as early as the end of the third day. It is generally supposed that when the bladder at last gives way and pours out its contents into the cavity of the abdomen, it is *ruptured* or *lacerated* by the violent distention. This, how-

* Richter, Spec. Therap. B. iv. p 392.

ever, is rarely the case, for in nearly all instances that prove fatal, the urine finally gains exit by an opening formed by the *ulcerative* process in some portion of the vesical parietes, or by the occurrence of gangrene and softening through which the water bursts from the distended bladder. In some instances, the lower portion of the bladder forms adhesions with the surrounding parts, and ulcerates—the urine being infiltrated into the cellular structure about the rectum, scrotum, and perineum. In such cases, extensive mortification and sloughing usually take place in these parts before the disease terminates in death. Instances have occurred in which adhesion took place between the bladder and rectum, and the urine was discharged by the anus, with an eventual recovery of the patient. (Richter.) Ulceration and effusion of the urine into the vagina sometimes occur in females. The anterior and superior part of the bladder has been known to ulcerate, and to give exit to the urine into the cellular tissue of the abdominal muscles, giving rise to extensive œdema of the anterior part of the body and thighs, with gangrene and fistulous ulcerations. Occasionally, the urine is evacuated by the umbilicus. (Richter.) Most commonly, however, the bladder ulcerates directly into the cavity of the abdomen, and occasions, rapidly, fatal peritonitis. When the bladder gives way, the tumefaction of the abdomen suddenly, in a great degree, subsides, and the abdominal parietes become soft and relaxed, until peritonitis ensues, when the usual tenderness and tension of this affection occur. Retention of urine does not, however, always terminate fatally by ulceration or rupture of the bladder, and consequent extravasation. Occasionally, death ensues before the bladder gives way, under symptoms resembling those which have been mentioned as occurring in the last stage of fatal *ischuria renalis*. In such cases, the distention is not confined to the bladder, but occupies the whole course of the ureters, which have been found enormously enlarged; and the pelves of the kidneys, even, are sometimes manifestly dilated by accumulated urine. When these conditions occur, the secretion of urine in the kidneys is ultimately arrested; the patient becomes comatose, or is seized with convulsions or spasmodic respiration; the perspiration acquires a urinous smell; and he finally dies in a state of apoplectic stupor. On dissection, water of a distinctly urinous smell is generally found effused between the meninges, and into the cavity of the brain.

There is another variety of retention of urine—*renal retention*—which arises from an obstruction of the ureters, either by inflammation and obliteration of its cavity, or by being plugged up with calculi, coagula of blood, or compressed by a tumour in some contiguous part. In such cases the ureter above the obstruction becomes more and more dilated, until it

acquires, in some instances, a very great size, and ultimately the kidney itself becomes greatly distended. Calliser has seen the pelvis of the kidney so dilated as to contain nearly a quart of urine; and the ureters have been found dilated to the size of the colon. (Desgranges.) Walter states, that he saw the kidneys so enlarged as to resemble the bladder, with its parietes attenuated almost into a membrane.* Such cases almost invariably terminate fatally under symptoms of cerebral oppression.

The diagnosis of *renal retention* is, however, so extremely difficult and uncertain, that its presence can never be inferred with sufficient probability of correctness, to found on it any practical indications; and it is here mentioned, rather as a pathological phenomenon, than as a subject for therapeutic observations.

Treatment.—From the foregoing observations, it is obviously of the utmost importance, in the treatment of this affection, to be particularly acquainted with the various immediate causes of urinary retention; and never to proceed to the employment of remedial measures until a strict inquiry has been made into the nature of the existing obstacle to the urinary evacuation. From ignorance or inattention to this important rule, diuretics are often given where the cause consists in permanent stricture; or persevering, rude, and ruinous attempts made to introduce the catheter, in the same condition of the urethra. There is another point which should be strongly impressed on the attention of the practitioner—namely, never to tamper too long with warm baths, tobacco injections, and various similar remedies, where the obstructing cause resists proper measures for perhaps forty-eight hours—more especially if it consists of stricture or impacted calculus. I have seen two instances which were thus tampered with for five days, and sacrificed to the timidity or want of decision of the practitioner; although the lives of both could, in all probability, have been saved, if tapping had been seasonably performed. In one case, where the obstruction was manifestly of a character which precluded all reasonable hopes of being removed sufficiently early to save the life of the patient, tapping was proposed and urged by a *surgeon*, but postponed by the other two *medical* attendants until next morning. On the following morning the operation was again put off until the afternoon, to try the effects of a tobacco enema. In the afternoon the bladder gave way and the patient died. *In retention of urine from paralysis*, the catheter is the only proper means for evacuating the contents of the bladder; and where the disease is unattended with enlargement of the prostate, its introduction may in general be effected with

* Einige Krankh. der Nieren und Harnblase, &c. Berlin, 1802. S. 5—16, tab. ii. iii. and iv.

the greatest ease. The object here, both in a palliative and curative point of view, is to obviate undue distention of the bladder; and as the loss of its expulsive power is very rarely transient, and the urine re-accumulates with more or less rapidity, it becomes necessary, in such cases, to draw off the urine every six or eight hours. I have known cases in which this operation was required four times daily for several months, before the bladder recovered its powers. When the distention of the bladder is very great, the urine will often flow off but very slowly through the catheter, and unless pretty firm pressure is made with the hands on the external vesical region, the greater portion of the urine will remain in the bladder. Some surgeons recommend the introduction of a flexible catheter, and leaving it in the bladder. The external orifice must be closed with a small plug, which the patient may from time to time remove, and give exit to the accumulated water. In some cases, attended with an inirritable state of the urethra and neck of the bladder, this practice may answer very well—more especially when the patient is remote from his surgeon, and cannot be conveniently visited at regular hours. With many patients, however, it causes much irritation, and cannot be borne without great inconvenience.

Whilst proper attention is paid to the regular discharge of the urine by means of the catheter, remedies should be employed with the view of restoring the lost tone of the bladder. For this purpose, *cantharides*, used both internally and externally, have been generally esteemed a very useful remedy. From twenty to thirty drops of the tincture may be taken two or three times daily, and continued until slight symptoms of strangury ensue. Richter speaks very favourably of a union of cantharides and camphor, in the proportion of a fourth of a grain of the former to one grain of the latter, given four times daily. Frictions with the *tinctura lyttæ*, and terebinthinate embrocations over the hypogastric region, also may assist in restoring the contractile power of the bladder. I have known unequivocal benefit obtained from a blister applied over the public region; and Richter recommends the application of a fresh onion, beat up into a pulp, to the perineum. The internal use of the spirits of turpentine, of juniper oil, of the animal oil of Dippel, Peruvian balsam, and according to Jahn, the infusion of *solidago virga aurea*, may all be used with more or less advantage in cases of this kind. Cold water dashed upon the lower part of the abdomen and perineum, or injected into the rectum, also, has been found beneficial in this affection.* Richter states, that in some cases of retention from vesical paralysis, almost immediate and very considerable re-

* Richter, Spec. Therap. Bd. iv. p. 377

lief was obtained by pouring water from the spout of a pitcher in a stream descending several yards, upon the hypogastrium.

Old people often find a great deal of difficulty in voiding the urine—they are obliged to stand a long time before the urine begins to flow, and at last it passes off in a very weak stream, though with little or no uneasiness in the bladder. Persons who are thus affected, may sometimes derive considerable benefit from the use of the *phosphoric acid*, as recommended by Dr. Valentin.* One drachm of this acid is to be dissolved in two drachms of distilled water, of which ten drops should be taken every two or three hours in a little water.

Retention of urine from inflammation, requires of course the usual efficient local and general antiphlogistic measures. Unless the symptoms of vesical distention be very urgent, it will be most prudent to reduce the inflammatory condition of the parts, before an attempt is made to draw off the water with the catheter. A very efficient blood-letting—*ad syncopen*, in robust and full habits, together with the free application of leeches to the perineum, cupping on the iliac and public regions, emollient clysters, fomentations, mild purgatives, and the internal use of antimony, constitute the means upon which our main reliance must be placed for removing the malady. Having used local and general depletion, and emptied the rectum by enemata, an anodyne clyster should be given an hour previous to the introduction of the catheter. The catheter will be much more easily introduced into the bladder, and with much less suffering to the patient, after these measures are promptly and efficiently employed. The warm bath—more especially the hip-bath, is a valuable auxiliary in such cases. It should be repeated every two or three hours, where conveniences are at hand for its proper employment. The patient should drink moderately of the blandest diluents; and emollient enemata ought to be frequently repeated during the day. After efficient general depletion, calomel and opium will usually procure more advantage than any other internal remedy. Where the disease is the consequence of an ineffectual hæmorrhoidal effort, or of suppressed hæmorrhoids, leeching around the anus is especially proper. Whatever other measures be employed, indeed, local depletion in this way, is one of the most important of our curative means in every variety of inflammatory retention of the urine.

For the treatment of spasmodic retention of urine, a great variety of remedies have been recommended. The warm bath often causes the urine to flow almost as soon as the patient is immersed ; but in some instances it fails entirely in procuring relief. Various local applications by frictions have been ad-

* Archiv. fur Pharmaice. Bd. i. st. iii. 332.

vised, and may be employed with occasional benefit. A liniment composed of two drachms of spirits of turpentine, the yolk of an egg, with six ounces of peppermint water, is particularly recommended by Kieser.* Richter applied bruised onions to the perineum and pubis, with evident good effects. The application of decoctions of stramonium, conium, and of poppy heads, may also be tried with some prospect of benefit in cases of this kind. Anodyne enemata are particularly indicated, and occasionally afford very prompt relief. I have known an instance which had resisted the warm bath, and various other remedies for five or six hours, speedily relieved by an injection of two drachms of laudanum in about a gill of warm milk, into the rectum. Bingham and others, strongly recommend *tobacco injections*. Internally, opium, in purely spasmodic cases of the disease, sometimes does much good; but in order to obtain any decided advantage from this narcotic, it should be given in large doses, so as to bring the system fully under its influence. Richter states, that he has known the following pills to relax the urethral spasm, in a very short time.† Of late years, the *muriated tincture* of iron has been a good deal employed in spasmodic retention of the urine. From twenty to thirty drops should be given every ten minutes, until nausea is produced. The late Mr. Cline, of London, speaks in the highest terms of this article, as a remedy in this variety of the disease. I have known it to be successfully employed in several instances of this kind. It should be particularly observed, however, that it is only where the retention depends on spasm of the urethra or sphincter of the bladder, that any benefit can be obtained from this medicine. There is much reason for believing that it is often given in retention from stricture, and even from inflammation; and that it has thus unjustly lost credit as a remedy in the spasmodic form of the disease. From the decided and speedy relief it procured in the few cases to which I have just alluded, I am well satisfied that it deserves particular attention as a means for removing spasmodic retention. Most writers, in referring to Mr. Cline's experience with this remedy, state that he gave but six or seven drops at a dose; but Dr. Johnson asserts, and no doubt correctly, that this is a mistake, and that Mr. Cline gave it in doses of from twenty to thirty drops every ten minutes, until nausea was produced.

* Hufeland's Journal. An. 1820, st. iii. p. 92.

† R. Gum assafœtid. ʒss.
Pulv. rad. ipecac.
— opii āā gr. iv.
Ol. menth. pip. gtt. iv.
M. ft.—Divide into two-grain pills. Take ten pills, three or four times daily.

The attempt to introduce the catheter, so long as the spasm of the urethra continues, is almost invariably abortive; and it is indeed highly improper to persist in the efforts to pass it into the bladder, where the spasmodic contractions are powerful, and resist the first few moderate attempts. It is surprising with what force the urethra sometimes contracts on the catheter, after it has been introduced to a considerable distance during a temporary relaxation of the spasm. So firmly is the instrument grasped, at times, that it is with difficulty drawn out again. Even where the urethral spasm is so far allayed by the means just mentioned as to enable the patient to force out small and interrupted jets of urine, the catheter can seldom be introduced into the bladder without a great deal of difficulty; for the urethra, in such cases, is so extremely irritable, that the irritation produced by the catheter generally excites immediate and insurmountable spasmodic contractions. If we succeed in introducing the instrument to near the bladder, its progress is almost invariably arrested by the contraction of the sphincter and upper portion of the urethra. By holding it awhile in one hand, and gently rubbing the perineum with the fingers of the other, we may often succeed in slipping it in, with little or no difficulty.

Retention from stricture, and other mechanical obstructions, is by far the most alarming form of the disease. The means to be employed when the retention depends on stricture in the urethra are, local and general bleeding—particularly by leeches applied to the anus and perineum, and cupping on the lumbar regions. After the action of the pulse has been reduced by these depletory measures, the patient should be put into a warm bath, more especially the hip-bath, and large injections of warm water and oil thrown into the rectum. When the bowels have been thus evacuated, great relief will in general result from an opiate enema, composed of barley decoction and from fifty to eighty drops of laudanum; and internally five or six grains of Dovers' powder every two or three hours, together with a repetition of the warm bath, and tepid diluent drinks, should be used until the skin becomes uniformly moist. Should all these means fail in procuring adequate relief, it will be proper to introduce with due caution a small bougie, "not to draw off the urine, but with the view of restoring the natural action of the muscles of the parts." Mr. Bell, from whose excellent work the foregoing mode of management is chiefly drawn, gives the following directions for introducing the bougie in such cases. "The patient should be standing or resting on his knees, if he is in bed. Take a wax bougie, oil it, soften it, give it the proper curve to pass the turn of the urethra, introduce it into the bladder; now make gentle pressure above the pubes; make the patient exert himself to discharge

the urine; sprinkle cold water on his thighs; withdraw the bougie while he continues the effort; and when he has the sensation as if he could pass the urine, withdraw the bougie altogether, and the urine will probably flow." Even where we fail to reach the bladder with the bougie, the patient may often be relieved by pressing a small bougie gently forward till the point of it has wedged itself into the stricture, when the hypogastrium is to be gently pressed, and the patient directed to exert himself to pass the urine; and at the same time his hands should be put in cold water, or some of it sprinkled on his thighs, (Bell). If these efforts fail, an attempt may be made with a very small catheter; and where, after all, the stricture is insurmountable, recourse to the operation of puncturing the bladder is the only means left us for preserving the life of the patient. As to the employment of caustic, or of *metallic bougies* for breaking through the stricture, nothing useful can be expected from them, unless the stricture be very narrow, and not situated too high up; which, however, is but very rarely the case. When the symptoms become urgent, and the general and local means already indicated have been ineffectually employed, it would be unnecessarily placing the patient's life in great jeopardy, by relying on the slow, and after all, uncertain process of working through the stricture with caustic. With regard to the mode of operating either for puncturing the bladder or laying open the urethra *in perineo*, above the stricture, and introducing a flexible tube through the artificial opening into the bladder, the reader must consult the writings of surgeons—particularly the valuable treatise on the urethra, &c. by Charles Bell, edited by Mr. Shaw. It may be observed, however, that in retention from urethral stricture, it is not often necessary to puncture the bladder; since an incision into the membraneous portion of the urethra above the obstruction, will in general answer every purpose that can be obtained from an operation of this kind. It would seem, that, at present, the majority of surgeons prefer the suprapubian operation, where puncture of the bladder is determined on. When retention from pregnancy cannot be relieved by pushing up the bladder, or change of position during the efforts to pass water—such as lying down on the back with the hips raised, the catheter is the only proper means for relief. If the pressure of the uterus against the urethra, opposes the introduction of the catheter, the patient must be placed on her back, with the hips elevated, and the womb pushed up with the finger of one hand, whilst with the other the catheter is introduced. When the suppression is connected with retroverted uterus, the bladder is usually raised so high above its proper location, that it becomes necessary in general to use the male catheter, in order to reach the cavity of the bladder.

DYSURY.

Difficulty and Pain in voiding Urine.

Difficulty and pain in making water, without any particular tendency to retention of the urine, is a very common complaint. In general, whatever is capable of increasing the irritability of the bladder, or of giving rise to the secretion of an acrid urine, will cause more or less pain and difficulty in voiding the urine. It is particularly apt to occur where there is an excess of uric acid secreted with the urine; and where the urine is charged with the earthy phosphates, it is seldom absent,—although in this latter case the urine is generally more copious than natural, and does not properly come under the designation of *dysury*, which implies *difficulty* in passing the urine, as well as pain. The usual sensations of dysury are—uneasiness in the neck of the bladder; frequent, painful, and slow micturition, with a sense of tenesmus or straining *in perineo*,—particularly at the moment the last drops are voided; and a cutting or burning sensation in the posterior part of the urethra. It may be produced by a great variety of causes, such as excess in eating, and in drinking spirituous liquors; the free use of condiments; irritating diuretics; onanism; excessive venery; acid ingesta; inflamed hæmorrhoids; ascarides; suppressed catamenia; the irritation of vesical calculi; astringent injections; redundancy of lithic acid, or of the phosphatic sediments in the urine; leucorrhœa; repelled cutaneous affections; rheumatism and gout. It occurs in inflammatory fevers, particularly in hepatitis, jaundice, scurvy, and from verminous irritation and dentition in children.

Treatment.—Where there is reason to suppose that the disease depends on simple irritation of the neck of the bladder from some accidental cause—as injections, gonorrhœa, &c.—it will, in general, be sufficient to empty the bowels by mild laxatives, and to order copious draughts of bland diluent drinks, such as barley water, flaxseed tea, or a solution of gum arabic, and perhaps an anodyne enema, and rest.

When the disease is dependant on an excess of the lithic or phosphatic sediments, the measures already mentioned under the head of *lithiasis*, for counteracting these secretions, must be resorted to. "When the urine is perfectly natural both in quantity and quality, and contains no mucous, purulent, or bloody deposite, there is reason to infer that the cause of the irritation is not connected with the urinary system, and must be sought for elsewhere, as in the rectum, or uterine system in females." (Prout.) Should it depend on an hæmorrhoidal

effort, recourse must be had to the means mentioned in the chapter on hæmorrhoids for counteracting it. Nervous and hysterical females are liable to extremely violent pains in the neck of the bladder and urethra, and which are generally most intensely felt immediately after discharging urine. Opium and camphor is the only remedy that I have found decidedly useful in cases of this kind. Four or five grains of Dover's powder, with three grains of camphor, taken three times daily, will seldom fail to remove the complaint.

Infants, as has already been said, are subject to violent pains of this kind, in passing urine during the process of dentition. The existence of the complaint is recognised by the violent shrieks which they utter on voiding the urine. The proper treatment in such cases is to open the bowels freely with castor oil or rhubarb, and to exhibit twice daily one-sixth of a grain of calomel, with a fourth of a grain of ipecacuanha. In the evening a drop or two of laudanum should be administered. I have never failed of speedily removing the affection by these remedies. When these cases are attended with a copious secretion of the phosphate of ammonia, which not unfrequently occurs, magnesia, so commonly administered to infants, is decidedly prejudicial.

In old people, this affection is generally attended with a diseased condition of the internal coat of the bladder, or calculous irritation, or disease of the prostate. The careful physician will, of course, endeavour to ascertain the cause; and for this purpose it is particularly important to examine the urine, and the state of the prestate, by examining through the rectum.

Females subject to leucorrhœa, are apt to suffer the most excruciating pains on voiding urine, from an extremely irritable and tender state of the orifice of the urethra. So sensible is this part, in some cases of this kind, that the slightest touch with the finger gives rise to extreme pain. I have found no remedy so effectual, in cases of this kind, as a weak solution of lunar caustic. Two grains to an ounce of water, to which a watery solution of opium is to be added, should be used two or three times daily as a lotion to the part; and a little lard applied with the finger, after each application of the wash. A strong solution of borax will also sometimes give relief; and I have used the citron ointment, mixed with an equal quantity of oil of almonds, with much benefit. At the same time, however, that these applications are used, it will be necessary to use frequent injections of a tepid solution of sulphate of zinc, or of alum into the vagina, and to employ other means for counteracting the leucorrhœal affection.

ENURESIS.

Incontinence of Urine.

This, though not in general a painful affection, is always a very troublesome and distressing complaint. The urine passes of involuntarily; sometimes constantly, in drops, as it is secreted and conveyed into the bladder; at others, only after a considerable portion has been accumulated in the bladder, the impulse coming on so suddenly and irrisistibly, that the utmost efforts of volition are not able to restrain its immediate flow. In some instances the involuntary discharge occurs by day and night, whether the patient be awake or sleeping—in other cases, by far the most common, it takes place only at night during sleep. This affection may, therefore, be divided into three varieties.

1. *Enuresis paralytica.*—In incontinence of urine, from paralysis of the sphincter of the bladder, the urine passes off continually, as it is secreted by the kidneys, without pain, and even without the least sensation of its occurrence. In such cases the diagnosis is not, in general, attended with difficulty. In very old people it is, nevertheless, not uncommon to find the urine to dripple off involuntarily, without any particular paralytic affection of the sphincter. These cases occur in the slighter instances of partial retention of the urine, from a weakened state of the expulsive powers of the bladder; for, when the urine accumulates in the bladder to a certain degree of distention, the resistance to a further dilatation of the bladder, in conjunction with the pressure of the abdominal muscles, slowly forces the urine into the urethra, and causes it to pass off *guttatim*.

This variety of incontinence often occurs as a symptom of some general disease. Thus, it is frequently met with in the latter stages of low fevers—in paraplegia and hemiplegia; and it is occasionally the consequence of concussion of the brain and spinal injuries. Richter observes, that an inability to retain the urine has arisen from plunging into very cold water. Among the local causes of this affection, the most common are—difficult parturition; injuries done to the neck of the bladder by the unskilful employment of obstetrical instruments; a large calculus located in the neck of the bladder; lythotomic operations; great dilatation of the neck of the bladder in the extraction of a calculus.

The prognosis in this variety of the disease is generally unfavourable, and when it occurs as a symptom in febrile affections, it is always one of the most dangerous indications.

Mere local paralysis of the sphincter of the bladder is indeed not dangerous, so far as the life of the patient is concerned, but it is an exceedingly annoying complaint, and by the urine constantly drippling off, very painful and distressing excoriations on the inner part of the thighs, scrotum, and perineum, almost always occur.

2. *Enuresis from mechanical causes*, independent of paralysis of the sphincter of the bladder, is not unfrequently met with. Most of the mechanical or organic causes mentioned under the head of *ischuria*, may, under certain circumstances, give rise to incontinence of urine. Tumours pressing on the bladder—as the gravid uterus; dropsical or scirrhous enlargement of the ovaria; tumours of the mesenteric glands; of the rectum, and of the neck of the uterus, have been known to give rise to this affection. It may also be produced by prolapsus uteri; hernia, or prolapsus of the bladder; by the irritation of vesical calculus; tumours and excrescences from the internal surface of the bladder, &c. These causes seem to operate in the production of incontinence of urine, by the pressure which many of them make on the bladder, and by the almost constant *nisus* to evacuate the urine, by which the sphincter may at last become so debilitated and relaxed, as to suffer the urine to pass off slowly and involuntarily; and cases have occurred, which arose from ulcerative destruction of a part of the sphincter.

3. There is a variety of incontinence of urine, described by Richter under the name of *enuresis spastica*, which sometimes occurs in very nervous or hysterical individuals, and which may therefore with more propriety be called *nervous enuresis*. The inability to retain the urine occurs in sudden and irregular attacks. The patient suddenly feels a most urgent desire to void the urine, and the impulse is so irresistible, that, in spite of the utmost efforts of volition, the urine immediately passes off without allowing time to withdraw, or even to reach for a vessel. This variety of the affection occurs also occasionally in very young children. Its most common *exciting* causes appear to be—ascarides; hæmorrhoidal affections; suppressed catamenia; gouty irritation; and leucorrhœa. Frequently, however, no obvious causes of this kind are present, and the disease apparently arises from a morbid irritability of the urinary passages, in connexion usually with a very excitable or nervous state of the general system.

4. *Eneuresis nocturna*.—This is a very common complaint among children, and occurs also occasionally in adults. When awake, the individual subject to this affection experiences no inconvenience whatever in this respect; but at night, while sleeping, *and lying on the back*, the urine is apt to pass off, either *involuntarily*, and without the least consciousness of

its occurrence, or *voluntarily*, under the influence of a dream. In children this variety of incontinence of urine is often "associated with some tendency to urinary disease, and very frequently a disposition to gravel; or sometimes, as in young females, with constitutional irritability and weakness; and in advanced life this affection is almost always associated with some organic or other affection of the neck of the bladder or prostate gland." In those cases where the discharge occurs in consequence of a voluntary effort during a lively dream, the urine, on examination, will almost invariably exhibit "some unnatural property, and most generally a strong disposition to, or actual deposite of gravel. "Hence," says Dr. Prout, "I have been led to infer that in this species of urinary incontinence, the acrid properties of the urine are chiefly in fault, and that these, favoured, perhaps, by the position of the body, and probably also by the morbid sensibility of the bladder, excite so vivid an impression on the imagination as actually to lead to a voluntary discharge of the urine." That urinary incontinence may occasionally occur in this way cannot be doubted; but it may justly be questioned whether the causes here assigned are so commonly concerned in the production of this affection as is supposed by the author just quoted. It is certain that we may sometimes prevent the recurrence of the evacuation by exhibiting remedies calculated, and intended to produce an irritation or tenderness in the neck of the bladder; as, for instance, cantharides—a circumstance which does not seem to favour the idea that the affection depends on the irritation of acrid urine. Habit, no doubt, often has a principal agency in keeping up this affection. When children neglect to pass off the urine on going to bed, the bladder is apt to become distended in the course of the night. This stimulus excites the brain, and awakens a lively dream, occupied with a desire to urinate, and the sphincter yields to the instinctive effort to void the urine.

In cases where the urine passes off involuntarily, and without the person being conscious of it during sleep, Dr. Prout thinks that there probably always exists "some morbid condition of the urinary organs," which it is in general extremely difficult to overcome, and continues, often, long after the age of puberty.

Tretament.—From the foregoing remarks on the various and very distinct character of the causes and pathological conditions of urinary incontinence, it is obvious, that the modes of treatment proper for its removal must be equally various and diverse in different cases. When the incontinence depends on general palsy, recourse must be had to the treatment mentioned under the heads of paralysis. In instances of urinary incontinence from mere local paralysis of the *sphincter vesicæ* with-

out any manifest spinal affection, or organic cause, we must endeavour by tonics and local stimulants to re-excite the activity of the sphincter. Among the means that have been proposed for this purpose, the following are the most important. *Alum*, in doses of twenty grains every four hours, with mucilage of gum arabic. This, according to Selle, has occasionally removed cases of long continuance. The *tincture of cantharides* will sometimes produce a very good effect. It should be given in gradually increased doses three or four times daily, until a feeling of ardor urinæ or strangury ensues. Externally, cold bathing, or cold water poured from a height on the pubis, and dashed upon the perineum, will sometimes do good. Richter recommends *cold injections* into the bladder; and in females cold water may be beneficially injected into the vagina. *Electricity* and galvanism have also been employed with success in cases of this kind.* *Stimulating frictions*, of various kinds, will occasionally assist in restoring activity to the sphincter. M. Lair, in a memoir on this affection, refers most cases of incontinence of urine to a want of equilibrium in power between the body of the bladder and its neck, the latter being in an atonic or relaxed condition. This view of the subject, led him to seek for a mode of stimulating the neck of the bladder, without affecting its body. With this intention he introduced, by means of a catheter, the tincture of cantharides, so as to touch the urethra in its prostatic part, as well as the neck of the bladder; and he affirms, that by this mode of management he cured three cases of this malady.† Dry-cupping the perineum, and blisters applied to the sacrum, are also very useful measures in cases of this kind. M. Canin has lately related two cases, before the French Academy of Medicine, which were cured by these applications. One of them, in a lad about fourteen years of age, the disease had already continued two years. It required eighteen applications of the cups, in the course of a month, before the cure was effected. In the other case, also in a young person, the cups were applied twenty times, and a blister laid over the sacrum, before the cure was completed. In both instances, various means had been tried without any apparent advantage.

In urinal incontinence from mechanical causes, we can seldom do more than palliate the disorder, or procure temporary relief. When it occurs from the pressure of the gravid uterus, nothing but the delivery of the child will in general remove the complaint; yet in some instances, incontinence of the urine occurs about the third and fourth month of pregnancy, and after having continued for a time goes off spontaneously, before the

* Loder's Journ. der Chirurgie. B. iv. hft. i.
† Med. Chir. Rev. January, 1827. p. 244.

termination of the regular period of gestation. In *nervous* or *spastic* urinary incontinence, anodyne enemata; uva ursi in union with Dover's powder, or the extract of stramonium; and the employment of tonics—particularly, iron, quinine, and the oxyde of zinc, together with a nourishing and digestible diet, regular exercise in the open air, early rising, and, in general, whatever is calculated to invigorate and to allay the morbid irritability of the general system, constitute the appropriate means in cases of this kind. Wendt speaks very favourably of the expressed juice of the *mesembryanthemum crystallinum*, in the incontinence of urine which occurs in very nervous individuals. When the patient labours under leucorrhœa, or ascarides, or an irritated state of the rectum from hæmorrhoids, particular attention should, of course, be directed to the removal or mitigation of these affections.

For the removal of *enuresis nocturna*, a great variety of means have been proposed, but they have not been very often applied with much success. The disease generally disappears, as children approach the age of puberty, and often at a much earlier period; and this occurs apparently from the powerful influence of a sense of shame and a determination during the waking state to resist the desire to micturate, which occurs during dreams of sleep. Mr. Prout observes, "that when the incontinence in children is associated with gravel, it is of the utmost consequence that this circumstance be attended to; and that the remedies appropriate for counteracting the formation of these urinary deposites should be employed before any other means are used to restrain the urinary incontinence."—for without this, almost all other remedies will be in vain. The urine should therefore be carefully inspected, both in its recent state and after it has stood awhile; and if a sediment either of the lithic acid or phosphatic variety be deposited, recourse should be immediately had to the remedial measures mentioned under the head of *lithiasis* in a preceding chapter of this work. After this object has been accomplished, we may proceed to the employment of tonics, and some one of the various remedies or modes of management which experience has shown to be capable of doing good. Among these, there is no article which has been more generally prescribed than the tincture of cantharides, with the view of producing a slight degree of strangury, or considerable ardor urinæ; so that the pain excited by the first efforts to micturate, may excite and awaken the patient, and thus interrupt the habit which always ultimately contributes chiefly to the recurrence of the discharge. This article does good too, no doubt, by its tendency to increase the sensibility and activity of the sphincter, and causing it thereby to make a greater resistance to the expulsive efforts of the bladder. The same effect may

sometimes be derived from the application of a blister to the sacrum; I have known an instance of long standing removed by the use of the spirits of turpentine, in doses of from fifteen to twenty drops three times daily, until a considerable degree of ardor urinæ was produced. Where these remedies do not afford relief, and there is reason to believe that the incontinence depends on a morbid irritability of the neck of the bladder—which is often the case in adults, an opiate administered on going to bed, will sometimes have the effect of preventing the evacuation during the night. Children should always be required to empty the bladder just before going to bed, and when they awaken at night, they ought to be taught to rise and pass off the urine. By this, we may often prevent the occurrence of the disorder, and even occasionally obviate it after it has occurred.

Mr. Charles Bell makes the following observations in relation to this subject, and which are worthy of particular attention in the management of this complaint. "Incontinence of urine," he says, "never takes place *but when the boy is asleep upon his back;* and the cure is a simple one. He is to accustom himself to sleep upon his face or side: the urine is not passed, nor is he excited to dream of making urine while he keeps this position. The circumstance is unaccountable, until we reflect on the position of this master-spring of the muscles of the bladder—*the sensible spot, a little behind and below the orifice of the bladder.* When a person lies upon his belly, the urine gravitates towards the fundus; but when he lies on the back, it presses upon this sensible spot, and distends that part of the bladder which is towards the rectum."

CHAPTER XXX.

HYDROPS.

Dropsy.

Dropsy, or rather the effused and accumulated fluid which constitutes the most conspicuous external character of this disease, must be regarded only as an *effect* of a primary morbid condition of the solids. This morbid condition of the solids constitutes the essential malady, to which the physician's attention must be directed in order to obtain rational views concerning its nature and remediate management. The cure of this disease does not depend merely on the removal or evacua-

tion of the aqueous accumulation, but principally, if indeed not entirely, on the removal of that disordered state of the vascular system, upon which the dropsical collection depends. Here, then, the fundamental question meets us: In what does this morbid condition of the solids consist, and in what particular structures is it chiefly located? According to the late Dr. Rush, the morbid action which gives rise to dropsical accumulations is seated in the arterial system, and is, in its nature, closely allied to inflammation. Dropsical accumulations, agreeably to his views, are the result of an increased action of the exhalent vessels, attended with a general pyrexial condition of the system. The correctness of this doctrine is now very generally, we might, perhaps, say universally admitted. Indeed, the removal of dropsy from the cachexia to the pyrexia, is justly regarded as one of the most important of modern improvements in pathology. That the increased secretion or effusion of serum which occurs in dropsy depends on a condition, which, if not identical, is at least closely allied to inflammation, receives the greatest degree of probability from the following circumstances:

Every one who has observed the progress of inflammation, knows that at the period when the inflammation is passing off, or changing to the subacute or chronic state, an effusion of serum is apt to occur into the surrounding cellular tissue or contiguous cavities. Thus, rheumatic inflammation, gout, and sprains, frequently pass off by an effusion of serum into the circumjacent cellular structure. It is well known, too, that hydrothorax is by no means an uncommon sequel of pleuritis; and hydrocephalus of arachnitis. Indeed, the pathological fact that all inflammations of the serous membranes, if not very violent, or speedily terminated in resolution, end in effusion, is directly corroborative of the correctness of this view of the pathology of dropsy. It is therefore highly probable, that the morbid action which exists in the tissues from which the dropsical effusions occur, partakes more or less of the nature of inflammatory excitement; but it seems likely, that it is always of the lowest grade of phlogosis, and in some instances probably amounts only to an irritation bordering on actual inflammation. It would appear, indeed, that a *considerable* degree of inflammation is incompatible with serous exhalation—and that this effect can occur to any material extent, only where the vascular irritation is somewhat below the grade of actual inflammation.

To this doctrine of the nature of dropsy, objections of much plausibility have been urged. When duly estimated, however, they do not appear to possess any solid value. It has been stated, for instance, that dropsy is not unfrequently the conse-

quence of profuse hæmorrhage and of other exhausting causes, and that in such cases, at least, neither the general symptoms, nor the nature of the causes justify us in considering the disease as one of an inflammatory character. Against this, however, it may be observed, that local irritative or inflammatory action, and great debility and exhaustion, are by no means incompatible. Sub-inflammation may exist in one structure or organ, whilst the general system exhibits all the characteristic traits of debility and cachexy. The post-mortem phenomena which occur in the human subject, and in animals who have died from hæmorrhage, would seem to show, indeed, that even in dropsies from hæmorrhage, there exists a morbid state, allied to inflammation in the membranous structures from which the effusion occurs. The experiments of Mr. Seeds and of Kellie, show that in animals bled to death, the meninges of the brain, and other membranous tissues almost invariably exhibit a highly injected and congested state, similar, in all respects, to what occurs in actual inflammation. In many instances of this kind a considerable quantity of watery effusion was found within the head; and in some instances, high and tumultuous action of the heart and arteries occurred shortly before the animals expired. I have met with several cases in which internal inflammation occurred, apparently in consequence of excessive losses of blood. I attended a gentleman, a few years ago, who was reduced to the utmost degree of exhaustion compatible with life, in consequence of a long-continued and almost uninterrupted loss of blood from the rectum, and who, finally, became anasarcous over the whole body, while at the same time, his eyes were very considerably and obstinately inflamed. The phlogistic character of dropsy is sometimes strikingly illustrated by the conversion of inflammatory diseases into dropsy, and vice versa. In a late number of the Medico-Chirurgical Journal, there is a case related in which rheumatism was successfully converted into dysentery, erysipelas, peritonitis, and finally dropsy.*

Although it must be admitted, that an *increased exhalation of serum* constitutes the chief immediate cause of dropsical accumulations, yet it is probable, I think, that there always exists a simultaneous *diminution* of absorption in the surface from which the effusion takes place. In the first place, it may be observed, that vascular irritative excitement or inflammation in a part, is necessarily attended with a preternatural afflux, and consequently, sanguineous congestion in such part. This being the case, it follows, that the capillaries of the structures from which dropsical effusion occurs, must be in a state of repletion

* Med. Chir. Rev. vol. vi. p. 197.

or sanguineous congestion. Now, it is a truth, I believe well established, that the function of absorption from the cavities and cellular tissue, is chiefly, if not entirely, performed by the veinous extremities. The experiments of Majendie, of Meckle, of Tiedeman, and Gmelin, have placed this physiological fact beyond all reasonable doubt. It appears, moreover, to be equally established, that the process of absorption accelerated or diminished, according as the capillaries contain a lesser or greater quantity of blood. When these are full and congested, and the current of blood moves along sluggishly, absorption is comparatively slow; and *vice versa*. This fact was long ago noticed by Home in his Essay on Croup. "The less blood," he says, "there is in the veins, the more rapidly will absorption be effected." When it is considered, therefore, that the tissues from which the dropsical effusions occur, are, as is believed, in a state of subinflammatory action, or at least of vascular irritation, and that the capillaries of these tissues must consequently be in a state of fulness or congestion, it would seem to follow, that the process of absorption must be correspondingly diminished. Hence, in every case of dropsy, there are, probably, two simultaneous morbid conditions present, namely, *increased exhalation*, and *decreased absorption*.

Etiology.—The principal general causes of dropsy are mechanical obstructions to the free return of blood to the heart; the influence of cold; excessive hæmorrhages; disease and inactivity of the kidneys; repelled cutaneous eruptions; suppressed habitual discharges; chronic diseases which tend to exhaust the system; arsenic; and some of the acute exanthematous affections, particularly scarlatina and measles. Dr. Ayre, in his treatise on this disease, denies that mechanical obstruction ever has any direct agency in the production of hydropic effusions. When dropsy supervenes on scirrhus of the liver, he considers it the consequence of the slow inflammation of the indurated viscus, extending to its peritoneal covering, and thence along the abdominal peritoneum. It is not improbable that the disease may, in some instances, be developed in this way; but it seems much more likely, that the congestion which necessarily occurs in the portal system in such cases produces, by degrees, that irritated condition of the peritoneal capillaries which gives rise to the effusion. It is a well established fact, that habitual sanguineous congestion in a part, tends ultimately to excite a low degree of inflammation. We may reasonably presume, also, from the above observations on the influence of vascular turgescence in diminishing absorption, that this process is in such cases morbidly diminished, even before capillary irritation and consequent preternatural exhalation have commenced. The influence of obstructions to the return

of blood to the heart, in producing serous extravasations, is sufficiently illustrated by the œdema which occurs when ligatures are passed round an extremity.

Cold rarely produces hydropic affections, unless there exists a predisposition to the disease. Of all the causes which predispose to the occurrence of dropsy from the influence of cold, the most powerful are scarlatina, measles, and the mercurial excitement. Neither these two exanthematous affections nor mercury are apt to give rise to dropsy, unless they co-operate with cold, or vicissitudes of atmospheric temperature. They leave the surface of the body in a highly sensible and irritable condition, and the cutaneous exhalation is usually carried on freely during the period of convalescence. When the body in this condition is exposed to the influence of cold, the cuticular exhalents are peculiarly liable to become torpid; and congestion in the capillaries of the subjacent cellular tissue almost necessarily ensues. This tissue being already predisposed to morbid excitement from the previous exanthematous affection, passes readily, under the combined influence of these circumstances, into a state of irritation or subinflammatory action, whence dropsical effusions proceed. It is not improbable, however, that in some instances of dropsy from scarlatina or measles, the disease may be the immediate consequence of the extension of the inflammation, or irritation from the skin to the subsequent cellular texture. The fact, however, that dropsy from these affections occurs but extremely seldom when the patient is carefully protected from the impressions of cold, would seem to show, that the disease is not apt to arise from an extension of the inflammation to the cellular tissue.

Dropsies from cold are frequently attended with slight catarrhal symptoms, and are always manifestly of a phlogistic character. When blood is drawn, it is almost always found sizy; and the pulse is tense, quick, and frequent—more especially in those cases which occur as the sequela of scarlatina or measles. The effusion generally takes place very rapidly. The variety of dropsy which most commonly proceeds from cold, is *anasarca*, although some degree of abdominal effusion is not uncommon.

In relation to dropsies from excessive hæmorrhages, or other profuse and long-continued discharges, we have two observations to make in elucidation of their etiology. In the first place, it would seem to be well established, that excessive losses of blood are almost invariably attended or immediately followed by irregular determinations, or foci of congestion, in one or more serous membranes. It is thus that the red and injected appearance of the arachnoid and other membranous struc-

tures occur in animals, when killed by bleeding. The structures which may have thus become the foci of determination, gradually pass into a state of irritated action, and which ultimately, in most instances, gives rise to dropsical effusions. There is, however, another circumstance connected with the production of dropsy by excessive losses of blood, which, though little estimated by pathologists, has, I am convinced, an important concern in the causation of the disease. I have already observed above, that immediately after a profuse loss of blood, absorption goes on with unusual activity. The blood-vessels are rapidly replenished with crude fluids; for the absorbents being extremely active, nearly all the aqueous fluids received into the stomach, are speedily absorbed into the circulation; and this is especially favoured by the very great thirst which almost always occurs after excessive sanguineous losses. The blood being thus inordinately supplied with a crude and watery fluid, becomes more irritating to the heart and capillaries, and diluted to such a degree as to pass off more readily by the exhalents. That this is not a hypothetical view of the subject, is shown by the experiments of Harles and Schulze, both of whom rendered animals hydropic by drenching them copiously with water, after they had abstracted from them large quantities of blood. Haller also bears testimony to the fact, that copious hæmorrhages produce an increase of serous fluid in the blood.

Dropsy from hæmorrhage is generally of the anasarcous kind. The blood in these cases always contains a very great over-proportion of serum, the crassamentum being very small, usually cupped, and often covered with a buffy coat. The pulse is frequently full and active, though not hard or tense. Dropsical effusions from hæmorrhage, rarely supervene immediately after the loss of the blood. Several weeks usually intervene between the hæmorrhage and the occurrence of the dropsical swellings.

Diseases or torpor of the kindeys, is another, though not a very common cause of dropsy. Dr. Bright,* has recently published some interesting cases of this kind. In nearly all these instances the kidneys were found in a state of disorganization. In dropsies depending on deficient urinary secretion from renal torpor or organic disease, the urine almost invariably contains a large portion of albuminous matter.

Among the causes of dropsical effusions, we may also mention amenorrhœa, diabetes, chronic gout, the intemperate and habitual use of spirituous liquors, and in short, almost every chronic

* See his *Reports of Medical Cases*. London, 1827.

affection or cause which is capable of exhausting the constitution, or causing important functional lesions.

General symptoms.—A dry and harsh skin is almost universally present. The appetite is usually impaired—but when the disease is the consequence of hæmorrhage, the appetite for food is sometimes particularly strong. The thirst is generally considerable, and sometimes very urgent. The bowels are commonly inactive, though readily moved by laxatives. The pulse is irritated, and usually indicative of a pyrexial state of the system; for however small and febrile, it is almost always quick and frequent. The urine is scanty, and generally of a deep red colour; sometimes jumentose—and occasionally, though rarely, whey-like or chylous.

In a diagnostic point of view, much attention has of late years been paid to the appearance and character of the urine. Dr. Blackall has investigated this subject with minute attention; and the observations of Ayre and Wells, have thrown further light on it. The circumstance which has particularly occupied the attention of these physicians, in relation to this subject, is the absence or presence of coagulable matter or serum in the urine of hydropic patients. In many instances of this disease, a greater or less proportion of coagulable serum exists in the urine, whilst in others this excretion is wholly devoid of coajulable matter. Observation would seem to show, that this occurrence is intimately connected with the general state of the system; for it would appear that in those cases of dropsy which are attended with an obvious phlogistic diathesis, and especially such *as arise from the influence of general causes*, the urine, with scarcely an exception, contains a large quantity of coagulable serum. The quantity of serum mixed with the urine, may therefore be regarded as a pretty correct index of the degree of general inflammatory excitement attending the disease. Serous urine may be considered as a kind of *pyrexometer* in hydropic affections, which, though not universally to be relied on, is yet sufficiently constant to entitle it to the attention of the practitioner. I am satisfied from considerable attention to this subject, that in almost every instance where there is coagulable serum in the urine of dropsical patients, the general condition of the system will be found manifestly phlogistic. In the dropsies which occur after scalatina, the urine generally contains a large portion of serum; whilst in local dropsies, and in which the general vascular system does not participate, little or no serum is detected in the urine. (Ayre.) When the urine is high-coloured, scanty, and on cooling, deposites a red sediment, or remains muddy, the liver, probably, is in a state of organic disease. (Cruikshank.)

After all, it is highly probable from what is said above, that

every case of dropsy is essentially phlogistic, so far at least as relates to the immediate local excitement which gives rise to the effusion. The general system, however, does not always participate in the local affection—the heart and arteries receiving no sympathetic impulse from the local, irritated, or subinflammatory action. In such cases, the general circulation is languid, and debility and relaxation characterize the disease. Where the heart and arteries do sympathize with the local hydropic affection, and this is by far most commonly the case, the pulse will manifest more or less of a pyrexial state, being sometimes full, hard, and active, or small, tense, quick, and frequent.

Ascites—Dropsy in the Cavity of the Abdomen.

Ascites, or abdominal dropsy, is very generally dependent on visceral induration, more especially of scirrhous of the liver or spleen. Whatever, therefore, has a tendency to produce induration of these visceræ, may become the remote cause of this form of dropsy. Among the most common and powerful of these causes may be ranked the habitual and intemperate use of alcoholic liquors; protracted agues; hepatitis; and inveterate dyspepsia. Whatever may be the remote cause of ascites, however, *chronic inflammation of the peritoneum* constitutes, no doubt, the immediate and essential cause of the abdominal effusion. Subacute inflammation of this membrane, in whatever way it may be produced, terminates perhaps always in effusion; although in some instances, this may not be so copious as to constitute dropsy. In the majority of fatal cases of ascites, the peritoneum exhibits a highly injected state; and in many instances, the traces of previous inflammation are still more conspicuous and unequivocal, its structure being either thickened and otherwise altered, or covered with an infinitude of miliary tubercles. Occasionally, indeed, no marks of preexisting inflammation whatever are to be seen; but the investigations of modern pathologists have rendered it abundantly manifest, that where no disorganization or structural change has been effected, the mere redness, or injected state of inflamed parts, may anddoes of ten disappear in *articulo mortis*, or even *post mortem*.

Besides the causes I have just mentioned, it will be sufficient to observe, that every thing which is capable of producing slow inflammation of the peritoneal lining of the abdominal cavity, may give rise to this variety of dropsy—such as cold; parturition; blows on the stomach; enteritis; metastasis of cutaneous eruptions, gout, or rheumatism; suppressed habitual discharges; and infarcted bowels.

Diagnosis.—The only condition which is likely to be mistaken for ascites is pregnancy. From this state it may be distinguished by the fluctuation; the uniformity of the tumour; the lateral pressure and distention of the abdomen on lying on the back; the oppression of breathing on lying down, so as to raise the pelvis and abdomen higher than the chest; the thirst; the paucity of the urine; the dryness of the skin, which characterize effusion into the abdomen. And, on the other hand, the absence of the peculiar symptoms of pregnancy, assist us in forming a correct diagnosis.

When the dropsical accumulation becomes very great, much uneasiness and general disturbance in the system arise from the mechanical irritation which it causes by its pressure on the organs and parietes of the abdomen. Respiration becomes short and anxious; the stomach will admit of but small quantities of drink or food; the fibres of the abdominal muscles yield, and the whole abdomen becomes sore and tender to the touch, and a dry and short cough generally comes on in the advanced stage of the disease. Ascites is very rarely wholly unconnected with anasarcous swellings. Ultimately œdema of the feet and legs, if not more diffused cellular effusion, ensues. The urine is much more apt to be very high-coloured and sedimentous in ascites than in the other forms of dropsy. The bowels too are more torpid, especially in aggravated cases.

Hydrothorax—Dropsy of the Chest.

Hydrothorax generally supervenes gradually, without causing, in its initial period, any particular inconveniences or disturbance, calculated to excite much attention or suspicion of the true nature of the malady. At length, however, the patient begins to experience a sense of oppression and tightness at the lower part of the sternum, with slight difficulty of breathing when at rest and in an erect posture. He now finds that on lying down, or using active bodily exertion, especially on ascending an acclivity or stairs, the dyspnœa and sense of suffocation are greatly increased. When recumbent in bed, he raises his head and shoulders high by means of pillows, which, by diminishing the pressure of the effused fluid on the lungs, generally enables him to obtain some sleep. His sleep is, however, frequently interrupted by sudden and violent starts, and feelings of alarm and terror. The pulse is irregular, and commonly very hard; the thirst urgent; the urine scanty, high-coloured, and sedimentous. As the disease advances the feet become œdematous; the countenance is expressive of anxiety and alarm, and of a mixed pallid and livid aspect. There is generally a dry and short cough attending the disease, more

especially when the patient lies down, or uses bodily exertion. All the foregoing symptoms increase, if the disease continues unchecked in its course, until the quantity of fluid in the chest is so great, as to prevent the patient from lying down even for a moment, and obliges him to take his short and disturbed periods of sleep in a sitting or leaning posture. The extremities are generally cold, and more or less benumbed.

Of all the foregoing symptoms, the sudden startings during sleep is, according to Baglivi, the most certain pathognomonic symptom of this disease. Lænnec, however, asserts that this symptom is sometimes absent; yet, when it does occur, it may be viewed as a very strong evidence of the existence of thoracic effusion.

Hydrothorax may occur either as an idiopathic affection, or as one symptomatic of organic disease of some viscus of the chest or abdomen. The former variety of the disease is very rare. (*Lænnec.*) By far the greater number of cases are of the latter kind. Organic cardiac disease is the most common source of symptomatic hydrothorax. Structural disorder of the liver and spleen may also give rise to the disease, and cases are recorded, which appeared to have arisen from organic disease of the stomach. Chronic inflammation of the pleura, occurring as the *sequel of acute pleuritis*, is always attended with hydropic or sero-puruloid effusion into the chest. A tuberculous state of this membrane, and aneurismal dilatations and ossifications of the large vessels within the cavity of the chest, sometimes give rise to this malady. Besides these peculiar causes, hydrothorax may be produced by any of the general and particular causes mentioned above. Dr. Ayre observes, that a plethoric state of the system predisposes especially to serous effusion into the cavity of the chest—more particularly in persons who have passed the middle period of life, and who have indulged freely in the pleasures of the table. The correctness of this observation will be acknowledged by every one who has paid due attention to this subject. When this disease arises from some general cause, the effusion almost invariably occurs only in *one side* of the chest; but in those cases which come on in consequence of organic or structural disorder, the dropsical effusion, almost without exception, takes place at once in both sides of the thorax. (*Lænnec.*)

Prognosis.—Idiopathic hydrothorax is not often a dangerous or unmanageable affection. Lænnec says, that he considers the instances of death from the idiopathic variety of the disease, as rare as one in two thousand, when under the control of judicious remediate management. Indeed, even in the symptomatic variety of the disease, we may frequently succeed in removing the effused serum; but this affords no permanent relief, since

we cannot thus remove the organic disorder upon which the effusion depends, and which consequently still continues to take place, and gives rise to further accumulation. Dr. Ayre asserts, what indeed I am well inclined to admit, that "the means which are sometimes used for the removal of the water in symptomatic hydrothorax, have now and then the effect at the same time of removing the organic disorder which gives rise to the effusion." Sir Henry Halford affirms, that he has ascertained from much experience, that if "the swelling in the feet or legs disappears without an increased discharge of urine, the patient generally dies very soon, and most frequently suddenly."* I have myself remarked this circumstance in several cases.

Diagnosis.—Ability to lie down only on the side affected, if the effusion has taken place only *in one side*. Percussion produces a very obscure and dull sound. The percussion should be made while the patient is in a sitting posture. General agitation, cough, and a sense of suffocation when firm pressure is made on the abdomen just below the ribs so as to push up the viscera against the diaphragm. Inability to rest and sleep in a recumbent posture. If with these symptoms there is habitual cough; *starting during sleep;* tension and irregularity of the pulse; slight œdema of the feet, and of the integuments of the chest; great dyspnœa on ascending an acclivity or stairs, with a disposition to syncope, we may pronounce on the existence of an effused fluid in the cavity of the thorax with confidence. (Roux's edition of Dessault's Surgery.)

Anasarca—Cellular Dropsy.

This form of dropsy consists in a morbid collection of serous fluid in the subcutaneous cellular tissue; and this accumulation may be either generally diffused throughout the whole body, or confined to a part of greater or less extent. The ordinary, and most unequivocal sign by which effusion into the cellular tissue is detected, is the pitting which occurs on firm pressure with the fingers. Anasarcous effusion commonly commences in the feet and legs, and thence rises up over the body, with more or less rapidity. This, of all the forms of hydropic disease, is the most frequently connected with a sluggish and languid state of the system, and it is this form of the disease especially which is apt to supervene on excessive losses of blood, and other exhausting or debilitating causes. The skin is exanguious, and of a peculiar sallow or pallid cast; and

* Transact. College of Phys. of London, 1820.

the patient frequently manifests a great disposition to drowsiness, with a depressed or sluggish state of the intellect. Anasarca is often attended with some degree of abdominal effusion, and the latter, when it forms the primary affection, is rarely wholly free from anasarca. When anasarca arises from general causes, it is, however, rarely connected with ascites. In nearly all instances in which these two forms of dropsy co-exist, the effusions into the internal cavities precede those into the cellular membrane, (Ayre.) Local anasarca may be produced by whatever impedes the free return of the blood by the veins. Hence, the gravid uterus, tight bandages, and the pressure of indurated glands in the groins, often give rise to œdema of the feet and legs, by compressing in some degree the iliac veins. Mere debility too, especially when aided by a long-continued erect posture, will have the same effect; and hence the frequency of œdema during the debility of convalescence from fevers. In nearly all organic diseases of the heart, œdema ultimately occurs in the feet and legs—more particularly in cases attended with ossification of the valves. Anasarca, from suppressed perspiration in consequence of the influence of cold, generally comes on and proceeds to its acme suddenly.

Prognosis.—This form of dropsy is not often attended with much danger when it occurs as an idiopathic affection—that is, without organic disease, and in consequence of some general remote cause, such as cold, arsenic, scarlatina, hæmorrhage, &c. When unattended with abdominal or thoracic effusion, it is, upon the whole, much more frequently removed by remediate treatment than the other forms of dropsy. The more rapidly the disease supervenes, the more easy in general is its removal.

Causes—Hæmorrhages; suppressed perspiration from cold, particularly after scarlatina, or when the system is under the influence of mercury; the long-continued internal use of arsenic; intestinal irritation; great debility and exhaustion; repelled cutaneous eruptions; chronic gout; excessive and long-continued diarrhœa; indurations; organic disease of the kidneys, &c. are the most common causes of this variety of dropsy.

Treatment.—If the pathology which is laid down in the commencement of this chapter be correct, the principal indications to be pursued in the treatment of dropsy are, 1, to subdue the local subinflammatory or irritated action of the structures from which the dropsical exhalation takes place; and, 2, to promote the absorption and removal of the effused fluid. The first of these *general* indications is to be fulfilled; 1, by diminishing the general momentum of the circulation where it is preternaturally great; and, 2, to derive the blood, as much as possible, from the capillaries immediately implicated in the mor-

bid effusion, and to equalise the circulation. The second *general* indication is to be fulfilled; 1, by promoting the activity of the various serous emunctories; 2, by diminishing the quantity of blood circulating in the venous extremities of the structure from which the dropsical fluid is poured; and, 3, by stimulating the activity of the absorbent system. One of the first and most important measures to be adopted in establishing an adequate derivation of blood from a part, is to diminish the general impetus of the circulation. In vain will we endeavour to diminish the preternatural afflux of blood to an irritated or inflamed part, if the *vis-à-tergo* of the circulation, or its general momentum, be suffered to remain undiminished. Whenever, therefore, the pulse is active, or tense and frequent, in dropsy, *blood-letting*, is an all-important measure. By reducing the mass of the circulating fluid in such cases, we not only predispose the veins to absorb more rapidly, but we contribute, moreover, in a direct way to the reduction of the process of effusion. I have known one or two efficient bleedings to cause an immediate and conspicuous amendment in the disease.* *Muscular* debility does not constitute any objection to blood-letting, provided the pulse be active, tense, or hard and frequent. The arterial system may be irritated to vigorous action, whilst the muscular system manifests a state of languor and debility. Of course, where the pulse is feeble and languid, venesection is uncalled for and improper. Having moderated the momentum of the general circulation, where it was too great, considerable advantage may, in general, be obtained from local bleeding, by cups, or leeches, applied to the chest or abdomen, according as the effusion may have taken place in one or the other of these cavities.

Blisters, also, often assist materially in the successful treatment of *ascites* and *hydrothorax*. They tend in a direct way to derive the circulation from the irritated or congested serous membranes, from which the effusion occurs, and consequently to lessen the effusion, and promote the absorption of the dropsical fluid. In anasarca, or in any other forms of dropsy attended with anasarcous effusion, neither leeching, nor cupping, nor blisters, however, can be applied without some risk of gangrene, or mortification. Little or no peculiar advantage can, indeed, be expected from *local* abstractions of blood in anasarca; and the same observation applies to blistering. Dr. Ayre speaks very favourably of the effects of a *seton* fixed in the integuments of the chest in *hydrothorax*. In one instance of this form of dropsy which came under my observation, much benefit appeared to result from this measure. I should prefer, however,

* Dr. Hohnbaum has recorded a case of ascites, which, after paracentesis had been repeatedly performed, was removed by a spontaneous epistaxis.—*Analen der Medizin. vol. iv. p.* 266 *of the Sequel.*

resorting to blistering and cupping, as being decidedly more derivative and prompt in their influence than setons or issues. In ascites, leeching, followed by blistering, or cupping, ought never to be neglected, unless the anasarcous state of the surface be such as to render such measures hazardous.

Cathartics.—Drastic purgatives have, from the earliest periods of medicine, held a high rank among the remediate means employed in dropsy. They constitute, indeed, a very important class of remedies in this affection. Very active purgation not only often carries off the effused fluid, but in some instances has the effect of removing that morbid state of the peritoneal capillaries, upon which abdominal dropsy depends. The efficacy of hydragogues is generally more conspicuous in *abdominal* dropsy, than in the other varieties of this disease. Their influence upon the morbid condition of the peritoneum, is much more direct and powerful from its contiguity to the mucous membrane of the intestinal tube, than upon the more remote structures concerned in the other forms of dropsy. Though, in general, less beneficial in anasarca and in hydrothorax, cathartics are nevertheless frequently of considerable service even in these forms of dropsy; nay, in some instances, the effects of active purgation in removing dropsical fluids from the chest, are surprisingly prompt and complete.* Pysicians have varied, and still differ in opinion, as to the particular articles of this class of remedies best calculated to procure the desired advantages. It is, indeed, agreed, that those purgatives which are most apt to cause copious *watery* stools—or as they are called, hydrogogues, are decidedly the most efficient in diminishing dropsical accumulations; but there exists some diversity of sentiment in relation to the relative value of this variety of cathartics.

Cremor tartar may be placed at the head of this class of articles in reference to hydropic affections. It is mild, cooling, and potent in its operation as a *hydrogogue*, and possesses the additional and peculiar advantage of exciting, at the same time, considerable diuresis. Dr. Ferriar's statements afford strong testimony of its usefulness in abdominal and anasarcous dropsy. Out of forty-three cases treated chiefly with this remedy, thirty-three were cured—a result, which, however, has been but rarely obtained by other practitioners. In my own practice I have had unequivocal examples of the efficacy of a course of purgation with this article. I have for ten years past been in the habit of prescribing it according to the following formula, and as it appeared to me, always with peculiar efficacy.

* Pring's Principles of Pathology, p. 269.

R. P. crem. tart. ℥iss.
P. sulphat. potassæ ℥ss.
P. scillæ maritim. ʒii.
Tart. antimonii gr. ii.
M.

S. A tea-spoonful of this mixture is to be taken four or five times daily.

Given in this way, it has never failed, in my hands, to produce copious watery stools, together with a considerable flow of urine, and frequently diaphoresis.*

Elaterium is another valuable hydrogogue in the treatment of dropsy. Dr. Ferriar asserts, that it surpasses all other articles of this kind in the removal of dropsical accumulations; and it continues to be a favourite hydragogue with many of the most eminent practitioners of the present day. Dr. Clutterbuck, especially, attaches great value to this article as a remedy in dropsy. I have employed it in a considerable number of cases of this disease, but it has not, in my hands, produced advantages equal to those I have derived from cremor tartar. Indeed, I have met with instances in which it manifestly did harm, by the violent irritation it caused in the mucous membrane of the bowels. It must be constantly borne in mind, that although an *excitation* of the serous emunctories of the intestinal tube will in general afford advantage, yet when the effects of purgatives on the mucous membrane transcend this grade of excitement and establish an *irritation*, bordering or actually passing into subacute inflammation, mischief must inevitably be the consequence. In prescribing such active purgatives, therefore, great care must be taken, lest in our anxiety to produce copious aqueous evacuations, we establish a morbid and permanent irritation in the mucous membrane of the bowels, and thus create a new and highly injurious focus of morbid sympathies in the system. Whenever such articles cease to produce copious watery stools when given in ordinary doses, and leave a general sensation of soreness or tenderness in the abdomen, we are admonished to desist from their further employment.

Active cathartics will generally bring off copious watery stools for the first two or three times that they are administered; by being again and again repeated, they will at last cease to excite the desired evacuations. A larger dose is then perhaps resorted to, but the stools will be still more incomplete and painful. Determined to overcome the supposed torpor of the bowels, the physician now prescribes a still more pow-

* This formula was first published by a German writer of the name of *Langhans*. I have known it to remove dropsical accumulations very speedily, after a great variety of diuretics and hydragogues had been used without much advantage.

erful dose, but instead of procuring a free and watery evacuation, the patient will probably be harassed by small mucous stools, attended with great tormina or tenesmus. Thus, mucous inflammation will be established in the intestinal tube, and a disease, which under a more judicious treatment might perhaps have been removed, is rendered incurable.

Gamboge is also a favourite hydrogogue with some practitioners; and I have myself employed it with much advantage. I have, however, always given it in union with *cremor tartar*, in the proportion of from two to four grains to a drachm of the latter article. It has appeared to me less apt to excite permanent irritation in the bowels than elaterium. Gamboge is the hydrogogue which Dr. Ayre prefers. He gives it as Dr. Ferriar did, to the amount of four or five grains at a dose, triturated with a few crystals of super-tartrate of potash. The gamboge rarely fails to cause copious watery stools. With regard to the frequency with which hydrogogue remedies ought to be administered in the treatment of dropsy, we must be governed by the general strength of the system, and the particular effects resulting from their operation. When the strength of the patient will admit, the purgative may be repeated every two or three days, provided they do not produce great tormina and soreness, and provided also that they cause free evacuations. I cannot but think, however, that the use of these remedies is frequently carried to an injurious extent in the present disease. Employed occasionally, and interchangeably with diuretics, they generally contribute materially to the reduction of hydropic affections, more especially of ascites and anasarca. But to exhibit them daily for a week and longer, must put the system to a severe trial, and even if the water be removed, frequently lay the foundation of much future suffering and infirmity.

Diuretics, of all our remediate means, are the most universally employed, and relied on in the treatment of dropsy. The kidneys appear to be the most direct and manageable outlet for dropsical effusions, and an important part of the treatment of this disease consists in exciting these emunctories to increased action. Observation has shown, that a full and phlogistic habit of body is much opposed to the free operation of diuretic remedies; and hence bleeding and purging in such a state of the system, are indispensable preliminary measures to the employment of remedies intended to promote the renal secretions. Equally difficult is it in general to procure the operation of diuretics in cases where the dropsical effusion is very extensive, and where the blood-vessels are drained of the serous portion of their contents. To obviate the difficulty which arises from this source, it will often be sufficient to allow the patient copious draughts of water, or of some other bland

fluids. Dr. Cullen states, that dropsies have been cured by the free use of diluent drinks, without any other remedies. I have known an instance of extensive anasarca cured, after a course of ineffectual treatment, solely by the free indulgence in eating water-mellons. Much dispute has existed as to the propriety of allowing patients the free use of aqueous potations. It has been strenuously asserted by some, especially the older writers, that the plentiful use of drinks in this disease, is decidedly prejudicial. Others, on the contrary, have maintained that this grateful indulgence is not only harmless, but often manifestly beneficial. Upon this subject, however, no universal rule can be laid down; for the fact appears to be, that, in some instances, a liberal indulgence in the use of drinks is followed by unfavourable consequences; whilst, in other cases, manifest benefit results from it. In all those instances of hydropic effusion which are the result of excessive hæmorrhage, copious draughts of diluent drinks are, according to my own observations and views, decidedly detrimental. When the blood-vessels are suddenly deprived of a large portion of their contents by hæmorrhage, their veinous extremities absorb with great rapidity whatever aqueous fluid may be taken into the system. The blood-vessels will therefore soon be replenished, if much fluid be taken into the stomach; and as this circumstance—from the large proportion of crude watery fluid in the blood-vessels must favour the dropsical effusion, as explained in the beginning of this chapter, injury can scarcely fail to result from the free use of diluents in such cases. The blood in dropsies from hæmorrhage consists almost wholly of serum, the crassamentum being always exceedingly small; and the more drink there is taken in such cases, the longer will the morbid disproportion between these two constituents of the blood continue. Upon this point, Dr. Parry makes the following observations, which go directly to strengthen the above sentiments. "When dropsy is associated with large hæmorrhages it does not usually accompany them, but comes on after they have ceased; and I have concluded, that it is the effect of the fluids taken into the stomach being absorbed too suddenly for the relative state of the vessels, which therefore strive, if I may be allowed the expression, to get rid of it by every outlet." It appears to me manifest, therefore, that in such cases of dropsy, it will be advantageous to abstain as much from the use of drink as the urgent thirst will admit. In instances arising from other causes, however, and in which the general diathesis is manifestly phlogistic, a moderate indulgence in the use of mild beverages may be allowed with advantage. When, indeed, the thirst is great and the blood sizy, diluent drinks may be regarded as decidedly remedial.

Among the diuretics recommended in the treatment of drop-

sy, the following are the most important, viz. squill, digitalis, acetate of potash, nitrate of potash, cantharides, juniper berries, colchicum, spirit of turpentine, erigeron heterophyllum, and parsley.

Of all these articles the *squill* is the most generally employed, and, upon the whole, the most useful diuretic in the treatment of hydropic affections. It does not, however, appear to be equally beneficial in all the varieties of this disease; for where there exists much febrile reaction, and the general diathesis is decidedly phlogistic, its effects are rarely conspicuously salutary. In instances of dropsy, on the contrary, where the urine is scanty, high-coloured, and sedimentous, with no very decided phlogistic habit of body, its powers are in general peculiarly beneficial. Almost all writers agree that squills are, generally, decidedly the best diuretic we possess in the treatment of *hydrothorax*. Blackall, M'Lean, Ayre, and many other respectable writers on this subject recommend this article as particularly calculated to do good in this variety of dropsy; and my own experience has furnished me with abundant evidence of the propriety of this recommendation.

The squill is commonly prescribed in union with other articles, and it would appear that its diuretic powers are frequently considerably enhanced by such combinations. Home thought that its diuretic effects were often much increased by uniting it with some article calculated to promote its emetic powers; but Cullen strenuously opposed this opinion, and pointed out its erroneousness. Perhaps the best adjunct to squills is *calomel*—more especially in the treatment of hydrothorax. I have been most satisfied with the triple compound of squills, nitrate of potash, and calomel, according to this formula.

R.	Pulv. scillæ	℈i.
	P. nitrat. potassæ	ʒii.
	Calomel	gr. v. M. Divide

into ten equal parts. S. give one every four hours.

The only objection which I have found to exist against this combination, is its tendency in some instances of producing gastric disorder; such as pain in the stomach, nausea, or vomiting. When effects of this kind occur, and the arterial system is not too much excited, we may unite one-fourth of a grain of opium, with this mixture, and often with very happy effects. The addition of calomel to the squill, I may again observe, is peculiarly valuable in *hydrothorax;* for although this mercurial will frequently do much good in the other forms of dropsy, yet its tendency to increase diuresis when given in this combination, is generally much more conspicuously displayed in the former variety of the disease. Dr. Blackall asserts, that

squills act much more powerfully on the kidneys when given in as large doses as the stomach will bear without nausea. Dr. Ayre, on the other hand, recommends the exhibition of this article in very small but frequent doses, and Richter, also, is in favour of this mode of administering it. I prefer giving the squill in doses of from one to two grains every three or four hours, whether singly or in combination. The squill is also frequently given in combination with digitalis; and many add to this combination small doses of calomel. In general, in anasarca from scarlatina or cold, digitalis may be very advantageously given in this manner.

The most serious objection to the employment of squills, is its aptitude to irritate and derange the digestive apparatus. Its tendency in this way is so considerable in some individuals, that it cannot be used at all. Indeed, some persons appear to have an idiosyncracy against the influence of this article—rendering even the smallest doses injurious. Besides the formula given above, I will add another one, which in some instances, has in my hands produced the most copious discharges of urine.

R.	Pulv. rad. scill.	gr. viii.
	Pulv pip. niga.	gr. x.
	P. nit. potass.	gr. xviii.
	Submuriat. hydr.	gr. iv.
	Pulv. opii	gr. ii.

This is to be given once daily, (altered from Fordyce.) I have found this combination particularly efficacious in cases attended with much languor and relaxation of the system. Richter mentions it as peculiarly useful in cases of this kind.

Digitalis is another valuable diuretic in the treatment of dropsy. The most opposite opinions, are, however, expressed in the books, in relation to its powers in this disease. By many it is highly extolled; whilst some speak of it as of little or no essential value. The weight of good testimony is, nevertheless, decidedly in favour of its usefulness; although, upon the whole, it is undoubtedly inferior to the squill as a diuretic in hydropic affections. According to the observations of Withering and others, digitalis will seldom do much good in persons who are of a robust habit and tense fibre. Its beneficial powers are most apt to be manifested in subjects of a relaxed and irritable habit of body. Dr. M'Lean entirely confirms this observation of Withering. He asserts, that he has seldom derived any particular advantage from this article in persons of a corpulent habit and an irritable fibre; but in such as were of "a weak, delicate, irritable constitution, with a thin, smooth, and soft skin," he has generally succeeded well with this remedy. So far as I am able to judge from my own experience,

I am inclined to think that there are good grounds for these observations. Dr. Blackall observes, that digitalis is our best remedy in those cases of dropsy which occur after scarlatina and measles; an observation which I believe to be well founded. I have known the diuretic effects of this article in such cases promptly efficient in removing the dropsical accumulation.

Digitalis would appear to be especially efficient in those cases of dropsy which are attended with a very scanty secretion of urine, becoming turbid when cold, and coagulating when exposed to the heat of a lamp, and depositing a red sediment after standing for some hours. (Blackall.) When the urine, though loaded with serum, is pale and crude, and rather abundant, digitalis, according to this writer, will very seldom do any good in hydropic affections. In such cases, he says, the squill is the best diuretic we possess. These observations deserve particular attention in the selection of an appropriate diuretic; for although they may not be universally, or perhaps very generally applicable, there is yet sufficient correctness in them as a general guide, to afford considerable assistance in the adoption of our remediate means.

Digitalis is not often employed singly. The most common mode of prescribing it, is in combination with squills. In cases attended with considerable febrile excitement, it may be very advantageously given in union with nitre. In very feeble habits, where there is much restlessness, spasmodic dyspnœa, and frequent and distressing urgency to void urine, I have known a combination of opium with digitalis to afford much relief. The addition of opium to this, or to whatever other diuretic may be used, is especially called for in cases attended with frequent and ineffectual efforts to evacuate the bowels—a condition which is sometimes superinduced by the inordinate use of drastic purgatives. Digitalis ought to be administered in substance; it has appeared to me to do most good when given in small but frequent doses—that is, from one-sixth to one-fourth of a grain every hour or two until its peculiar influence on the system is perceptible. In general, this article is more effectual in removing anasarca than ascites, and ascites than hydrothorax. Many physicians are in the habit of prescribing it, in union with *calomel*, and there can be no doubt, that under certain circumstances, occasionally present, this combination will act with peculiar advantage. Drs. Blackall and Paris, however, decidedly condemn this practice. Conceiving that the curative powers of digitalis in dropsy are dependant on its sedative effects, they maintain that calomel, being a stimulant of no inconsiderable powers, is incompatible as a therapeutic agent with the digitalis, and that it must necessarily tend rather to counteract than to promote the salutary influence of the latter.

This objection appears to me hypothetical; and it certainly is frequently contradicted by experience. There is no good ground for believing that the diuretic effects of this article depend on its sedative powers; for the former effect is generally most conspicuously evinced when the action of the heart and arteries is least reduced; and, on the contrary, diuresis is sometimes entirely wanting when the sedative influence of the digitalis is the most conspicuous.

In general, the more phlogistic the diathesis is, the more appropriate will this article be. In such cases we may employ it with the twofold intention of exciting an increased flow of urine, and of moderating the general vascular irritation.

Cantharides have been employed with no inconsiderable degree of success in the treatment of dropsy.* Where the general habit is weak and sluggish—and especially where the disease is connected with an original torpor of the kidneys, this article will sometimes excite copious diuresis. Hufeland recommends the following formula for administering the cantharides in this affection.

R. Pulv. canthar. ℈ii.
Amyd. dulc. ʒi.
Sacch. alb. ʒiss.

Rub them together in a mortar, and make an emulsion, by adding gradually ten ounces of warm water. Of this a tablespoonful is to be taken every two or three hours, until symptoms of strangury supervene. I have known this mixture to reduce anasarca from suppressed menses, very speedily. This remedy appears to be particularly adapted to cases arising from suppressed cutaneous affections. (Richter.)

Colchicum autumnale has not hitherto been much employed in the treatment of dropsy; its powers, however, appear to me to deserve more attention in this respect than it has as yet, I believe, obtained. I have derived great benefit from this medicine in a case of anasarca, apparently the consequence of a gouty habit; and I am disposed to give it a trial in all cases attended with a rhumatic or gouty diathesis. I have found it most efficacious as a diuretic, when given in union with the sulphate of potash. In the case just alluded to I gave it in doses of forty drops of the vinous tincture, with a scruple of the powdered sulphate of potash every six hours.

The Nitrate of potash has been much employed, and often with the happiest effects in hydropic diseases. It is usually given in combination with other articles—particularly squills and digitalis. I have employed it by itself with much benefit

* *Prispane's* Select Cases. *Chalmers* on the Diseases of South Carolina. *Robertson's* Treatise on the Powers of Cantharides used internally. Edinb. 1826.

in a few cases of ascites. It will rarely do any good in hydrothorax. From its known antiphlogistic powers, it is manifestly only in cases characterized by a phlogistic habit of body, that any advantages can be looked for. When the pulse is small, corded, and irritated, nitre and opium in combination, will frequently do much good. From fifteen to twenty grains of the former, with from one-fourth to half a grain of the latter may be given every three hours. I have known this combination to render the pulse soft and expanded, the skin moist, and the urine copious.

There are a number of other diuretic remedies, all of which have been used with more or less of success in the treatment of dropsies. It is by no means uncommon to succeed in removing dropsical accumulations through the renal emunctories by means of some simple diuretic article, after the more powerful and esteemed remedies of this kind have been tried without success. I have known the infusion of the erigeron heterophyllum to bring on copious diuresis and to reduce dropsical swellings speedily, after the remedies already mentioned had been given unsuccessfully. This is, indeed, an article which merits no small degree of attention as a diuretic in this disease. It may be conveniently employed as a ptisan, along with the squill, digitalis, or some other more powerful article. The infusion of the seed of *daucus carota*, too, is an excellent diuretic, and has been a good deal employed by the practitioners of this country. Of a similar character are *juniper berries*, *lactuca virosa*, *gallium aperine*, horse raddish, and a number of other diuretic vegetables, employed as domestic remedies, and occasionally also in regular practice. Of the usefulness of the *gallium*, I can speak from experience. I knew an instance, where a strong infusion of this vegetable removed a long standing case of abdominal dropsy in a very short time. Whatever remedies may be prescribed, the concomitant use of some one of these ptisans will generally contribute more or less to the success of the treatment. When the stomach will bear it, the erigeron will in general answer better than any of the other articles just mentioned. This was a favourite medicine with the late Dr. Wistar. It is well to have a variety of diuretics at hand, in the treatment of dropsy ; for in some instances, a number of the most active medicines of this kind will be used without the least perceptible action on the kidneys, and yet at last there will be some one found which will speedily produce copious diuresis. It is a good rule to vary the prescription, if after a reasonable time and proper auxiliary measures, the desired effect does not ensue.*

* Dropsy is a disease by no means so uniform in its character as is generally supposed. It arises from a great variety of remote causes—in

Diaphoretics are mentioned by Celsus as among our best means for the cure of dropsy. We can very rarely procure the full operation of diuretic remedies so long as the skin remains uniformly dry and harsh. The union, therefore, of antimonials with diuretics will, in instances of a decidedly phlogistic character, often assist materially in removing dropsical accumulations. Sydenham appears to have placed very considerable reliance on the employment of antimony in this affection, although his principal object in prescribing it was the production of active vomiting—an effect which will sometimes procure the speedy absorption and removal of dropsical accumulations from the abdomen and cellular tissue. I have never myself employed antimony with this view, but as a diaphoretic I have known it to produce very happy effects. In those cases of anasarca and ascites, which occur in consequence of suppressed perspiration from cold when the system is under the influence of mercury, or after an acute cutaneous disease, I know of no remedy which will more certainly procure relief than antimony, given in minute and frequently repeated doses. I have also known it speedily successful in a case of anasarca from a protracted intermittent. In general, wherever the exciting cause of the disease is cold, or connected immediately with torpor of the cutaneous exhalents, antimony ought not to be neglected as a means of relief. I have always given it dissolved in a large proportion of some diaphoretic beverage—such as infusions of juniper-berries, wild-carrot seed, parsley, or erigeron. One grain may be dissolved in a pint of any of these ptisans, and drank *ad libidum* during the day, so that at least one, and, if convenient, two pints may be taken in this space of time. Monro speaks favourably of a combination of antimony and opium: when the disease is attended with a rheumatic habit, this mixture is often especially beneficial. It must not be forgotten, however, that very profuse perspiration and diuresis are incompatible; all that is requisite, in relation to the action of the skin, when we continue to act on the kidneys, is to render it soft, relaxed, and moderately moist.

the most opposite states of the system, with regard to vascular action and repletion—it is dependant on various organic affections; appears as a consequence of different acute and chronic affections, and is attended with diverse and distinct characters of the urinary secretion. These circumstances point out much diversity in the general character of the disease itself, and it is not reasonable to suppose that any one particular diuretic is equally applicable to the disease under all these diversities of general character. When, moreover, we take into view the diversities of constitutional habit—of idiosyncracy—and the ever-varying state of the organic functions—we can readily conceive, that out of a great number of diuretics, there might not be more than one which is calculated, in a particular instance, to excite the action of the kidneys. It is, therefore, a good rule to vary the prescription, if after a reasonable time and proper adjuvant measures, the desired effect does not follow.

In those cases of anasarca, in which the skin is cold and very dry, with a sluggish action of the pulse, the *black sulphuret* of iron is a medicine of excellent powers. Dr. Archer, of Norfolk, has reported an interesting case which was speedily cured by this remedy. It is also mentioned by Alibert,* as an excellent medicine in anasarca attended with great relaxation and weakness. I have had occasion to prescribe it in two instances of this kind—both the consequence of immoderate flow of the lochia, and great previous debility; and the results were highly gratifying. This article generally excites a glow of warmth throughout the whole body, attended with a peculiar tingling sensation in the extremities; and in most instances a profuse perspiration ensues a few hours after it is taken. Besides its diaphoretic effects, it is also peculiarly calculated to do good in such cases, by its tendency to invigorate the assimilating functions. I am not aware that any advantages are to be obtained from this article, in any other cases than such as proceed from excessive hæmorrhages, or other exhausting and relaxing causes. Diaphoretics are in general useful only in anasarcous dropsy. Among the ancient Romans it was customary to excite sweating in this disease, by burying the body up to the neck in warm sand :† and I may here also mention the use of oiled silk, which, when closely applied over the surface of the body, generally excites a considerable perspiration. This application is particularly useful in local dropsical effusions into the cellular tissue.‡

Emetics have by some been highly extolled for their power of removing dropsical accumulations. I have already mentioned *Sydenham* as an advocate for their employment in this disease; and I may add the authority of Richter, Lentin, Cruikshank, and Pinot in their favour. I knew an instance of ascites which was rapidly removed by spontaneous and protracted vomiting; but I have never yet prescribed remedies with a view to their *emetic* operation in the present disease.

Mercury is a favourite remedy with many of the American physicians in the treatment of dropsy; and there can be no question as to its utility in certain modifications of the disease. In cases depending on hepatic and splenic disorder, it constitutes, indeed, our main stay; and in the treatment of *hydrothorax*, it is generally highly beneficial. In instances which occur in consequence of excessive hæmorrhage, or other exhausting causes, and in subjects of a scorbutic or depraved habit of body, mercury, however, cannot be employed with propriety. Some degree of firmness of the general habit may

* Elémens de Therapeutique, tom. i. p. 180.
‡ Celsus. De Medicina, lib. iii. cap. xxx.
‡ Richter Specielle Therapie. vol. iii. p. 59.

be regarded as the most favourable for the exhibition of mercury, with a view to its constitutional influence. (*Blackall, M'Clean.*) A decidedly inflammatory condition of the system, however, is opposed to the beneficial influence of mercury in this disease; and where such a diathesis is conspicuous, antiphlogistic measures must precede its employment. *Calomel* is the preparation usually prescribed in dropsy. As a general rule, mercurialization should not be carried beyond the extent of producing only a slight soreness of the gums;—profuse ptyalism being not only unnecessary to procure the peculiar advantages of this remedy, but sometimes, perhaps generally, injurious in its consequences, more especially in anasarca. This article, as has already been stated, is almost always given in combination with some diuretic, particularly squills and digitalis.

In ascites, much benefit may sometimes be derived from mercurial frictions on the abdomen. From some cases which have been recently published, it appears that subacute inflammation of the peritoneum often yields to mercurial frictions, without scarcely any aid from other means. Lænnec has cured cases of effusion into the abdomen by this application, after various other remedies, usually relied on, had been employed without benefit.*

Tonics were at one time much employed in dropsy. The disease was supposed to depend chiefly on debility and relaxation, and every effort was accordingly made to invigorate the system. In general, this class of remedies is not only useless, but injurious. Occasionally instances are met with, in which tonic remedies produce very good effects. Where the general debility and languor are very great, and the pulse feeble and sluggish, bark, iron, particularly the muriated tincture, and the vegetable bitters, may perhaps be used with advantage. *Gum kino*, in large doses, cured a case, after various other remedies had been used without benefit.† The *sulphate of copper* has been frequently given with complete success in cases of dropsy attended with great vascular debility. Gardane, Chalmers, and Wright, mention successful instances of this kind. This remedy has been generally given in combination with opium, in doses of a grain of each three times daily.

It were, indeed, almost an endless task to give an account of all the remedies which have, under peculiar circumstances, removed dropsical accumulations. The following are, perhaps, the principal articles of this kind. Ipecacuanha, Dover's powder, helleborus niger, pillulæ hydragogæ janini, radix sambuci,

* Revue Medicale, Mai, 1824.

† Medico-Chirurg. Review, July, 1827.

the fixed alkalies,* millepedes, lactuca virosa, garlic, scandix cerefolium, apium graveolens, onions, iris palustris, sorbus aucuparia, balsam copaiva, turpentine, olive oil, *opium*,† apocynum cannabinum, pipsissiwa, trifolium fibrinum, camphor, and asparagus. Dr. Laurie has published cases which tend to show that the internal use of *nitric* acid is often very efficacious in those forms of dropsy which succeed to acute febrile diseases.‡ Within the last few years, the *radix caincæ*, a South American product, has been highly recommended for its diuretic powers. In Germany, it has been used with great efficacy in some varieties of dropsy.§ In this country it has not, I believe, as yet been employed as a remedial agent.

The external application of diuretic agents, has of late years been employed with considerable success in this disease by some of the French physicians. It would appear from the accounts which have been published, that the kidneys may often be as actively excited by the application of diuretics to the surface of the body by the way of frictions, as when they are taken internally. Indeed, where the stomach is weak and irritable, a condition so peculiarly opposed to the regular operation of diuretics, the external mode of using them, if, in truth, their remediate influence may be thus fully obtained, would be decidedly preferable. I have seen but one instance of this disease in which the production of diuresis was attempted in this way, and this case afforded me sufficient evidence, that *some* advantage at least may, perhaps, frequently result from frictions on the abdomen with diuretic remedies. In a recent number of the *Revue Médicale*,‖ there are four cases of thoracic and abdominal dropsy, which were successfully treated upon the *iatraleptic* plan. The author, Dr. Guibert, directed frictions

* The alkalies are, indeed, sometimes decidedly beneficial. Monro, Pringle, Mead, and Fallot, speak of them, in terms of encomium, as remedies in dropsy. They are said to be particularly applicable in cases attended with great atony. They have been generally given in union with vegetable bitters. I attended an old lady, during the present year, (1828) affected with ascites and anasarca of the inferior extremities, in whom I found no remedy so useful as the salt of tartar in union with the expressed juice of *tansy*. She took ten grains of the alkali with a table-spoonful of the juice, thrice daily. The celebrated Frank, thought highly of the powers of the alkalies in dropsy. His formula is,—

R. Kali. carbon.	℔j.	
Herbæ absinth.	ʒi.	
Infunde c. vin. rhen.	℔j.	Digere per xxiv. horas. cola.

Dose, one ounce every four hours.

† I have prescribed opium in a case attended with a rheumatic habit with unequivocal benefit.

‡ Analen der Medizin. vol. iv. p. 266.

§ Dr. Mœring.

‖ Septembre, 1828, p. 349.

on the chest, or the abdomen, or the thighs, according to the form of dropsy present, with the following fluid.

R. Tinctura scillæ.
——— digitalis.
——— sem. colchic. āā ℥ss.
Ol. camphorat. ℥iss. M.

The frictions to be made with flannel three or four times daily, and continued from five to twenty minutes. Concomitantly with this external application, he ordered a diuretic mixture to be taken internally, composed of squills, digitalis, and nitrate of potash in equal quantities, and a somewhat larger portion of *thridace*, in doses of two grains and a half of the mixture twice daily. "The iatraleptic method of treating dropsy," says Dr. G., "has appeared to me particularly efficacious in abdominal dropsy, and it is chiefly to the external employment of the above diuretic liniment, that I think myself warranted to ascribe the success which attended my efforts in the above cases. The internal remedies which I employed at the same time, seemed to me very useful auxiliary measures, but they could not, I am persuaded, have by themselves produced the very copious urinary discharges, resembling almost complete diabetes, which occurred in these cases under this treatment. In all of these cases, and I might adduce others equally remarkable, the dropsical swellings were reduced with surprising rapidity. The iatraleptic mode of treating this disease is attended with little or no inconvenience to the patient. It should not, however, be adopted until the phlogistic state of the system is reduced by appropriate antiphlogistic means. In idiopathic ascites and anasarca, this mode of treatment will succeed almost without exception."

Among the external means which may be resorted to with occasional advantage in ascites, a tight flannel bandage worn around the abdomen will frequently prove decidedly beneficial. This application was much extolled by the late Dr. Monro in the treatment of abdominal dropsy. I have repeatedly found such a bandage of advantage, particularly after the dropsical swellings had been in part removed, but continued stationary for some period. The effects of the bandage will be increased, if it be soaked in a strong solution of salt, and dried again before it is applied. Would not the powers of such a bandage be still more enhanced by imbuing it with a strong infusion of squills, or of some other active diuretic?

After all, our efforts to prevent, or remove the accumulation of dropsical effusions, are but too frequently foiled; and it becomes necessary, in order to prolong the life of the patient, and to gain more time for remediate applications, to evacuate the collected fluid by means of a puncture into the cavity which

confines it.* It is usual to delay this operation until every other measure for the removal of the fluid has been found unavailing, and the distention from the effused water becomes so great as to threaten immediate danger. This is one of those errors in medical practice, which, though readily and generally acknowledged by practitioners, it becomes extremely difficult to correct, on account of the great dread which all surgical operations, and especially such as penetrate into the large cavities, are so apt to excite with patients. Being, moreover, universally viewed as the *last resource*, and only for a temporary procrastination of the fatal conclusion, few are willing to submit to the operation, until all other means for removing the water have been tried. Without doubt, however, tapping is by far the most direct and certain means for removing dropsical accumulations, and it is as safe in its consequences as any of the other measures that may be adopted for this purpose. Were tapping more early resorted to in ascites than it always is, there can be but little doubt, that its permanent usefulness would be greatly enhanced. The mere mechanical irritation of the effused fluid, when the distention is very great, must tend to keep up that morbid condition in the peritoneum which gives rise to the effusion. The earlier this over-distention is taken off, the greater, one may reasonably presume, must be the chance of effecting a radical cure by some of the means already mentioned—more especially by local bleeding, blistering, mercury, and frictions. Indeed, the operation is by no means simply palliative in its consequences. There are many cases on record which were perfectly cured, solely by removing the water by an operation. Frank, Lentin, Richter, Dessault, Fothergill, and others relate cases of this kind; and there is reason to presume, that if tapping were not so commonly delayed until the disease has assumed an inveterate character, such fortunate terminations would be much more frequent than they are under the present plan of procrastinating it.†

* It is truly surprising what large quantities of water are sometimes drawn in the aggregate, in cases of abdominal dropsy. M. Lecourt de Cantilly has related an instance in which the operation of tapping was performed one hundred and thirty-five times in the course of six years, and by which the aggregate amount of two thousand seven hundred pounds of water was drawn off. Mead mentions a case (*monita*) in which tapping was performed seventy times in five years and seven months, and which yielded one thousand nine hundred pounds of water. M. Louyer Villermay relates an instance where tapping was undergone five hundred times, the patient having finally tapped himself.—*Revue Mèdicale, Juillet*, 1828.

† M. Lhomme, in January, 1827, communicated to the French *Royal Academy of Medicine* an inveterate case of ascites, which after hydragogues, diuretics, and tapping had been fully, but unavailingly employed, was speedily cured by the injection of the vapour of wine into the

CHAPTER XXXI.

SCROFULA.

Scrofula appears in a great variety of forms and grades of violence—varying from the slightest habitual deviations from health, to the most distressing, rapid, and fatal forms of local and general disease. In a general way, scrofula may be divided into two distinct forms; namely, its *latent* and its *active* states. The former constitutes what is usually called the *scrofulous habit* or diathesis; and the latter, the state of full development and activity of the disease.

The scrofulous habit, or predisposition to the active forms of the malady, is characterized by the following phenomena: a peculiar delicacy and languor of the countenance, with a soft, rosy tint of the prolabia and cheeks;* or a pale, soft, flaccid, and apparently tumid aspect of the countenance, with a dull lead-coloured circle round the mouth, and a swollen appearance of the upper lip. The hair is generally fair, and the eyes blue or black. The head is usually large, particularly the posterior part, and the temples flattened, or somewhat depressed. There is in general a great proneness to slight catarrhal affections, during which the wings of the nose and upper lip are apt to become considerably swollen. The edges

cavity of the abdomen through an orifice made with a trochar. He was led to the employment of this *anceps remedium* by having read in the *Annales de la Medicine Physiologique* an account of two cases of abdominal dropsy which were cured by the same means. The vapour of wine was injected sixteen times without causing any pain or particular uneasiness in the abdomen, with the exception of some slight colic pains which required no remediate attention. At the time of reporting the case, two years had already elapsed from the period at which the injection was made and the malady arrested. M. Lhomme tried the same means in another case, but without success. No unpleasant consequences, however, resulted from the operation. It is *not* difficult to conceive how such a measure might put a stop to dropsical effusion, if a state of chronic inflammation of the peritoneum be its cause. It is well known that stimulating applications are generally the only means effectual in removing inflammations of a low or languid grade of excitement. We thus remove gleet, chronic ophthalmia, and chonic bronchitis, by stimulating injections, collyria, and inhalations of the vapour of tar.—*Revue Médicale*, vol. i. p. 343.

* This appearance of the countenance is particularly met with in those instances of a scrofulous habit, in which a particular tendency to phthisis pulmonalis exists. Mr. Lloyd, however, asserts that there are no just grounds for regarding the white and rosy cheek, the flaxen hair, and azure eyes, as marks indicative of the scrofulous habit.

of the eyelids are much disposed to become inflamed, and where the scrofulous tendency is strongly developed, the tarsi are almost constantly red and tender. The digestive powers are usually weak and irregular, and the bowels are apt to be either constipated, or affected with painful mucous diarrhœa. The appetite, also, is very variable—being sometimes entirely depressed, and at others very urgent. The urine commonly deposites a whitish sediment, and becomes turbid some time after it is passed. A disposition to transient swellings of particular parts, as of the face and scrotum, is mentioned by some writers as belonging to this habit; in female children, a leucorrhœal discharge not unfrequently occurs from time to time. In very young children, excoriations behind the ears, scabby eruptions about the head and lips, obstinate ophthalmia, together with a fretful and irritable temper, are among the most common phenomena attending the scrofulous diathesis. The growth of the body usually proceeds slowly; but the mental powers are generally precociously developed, and often astonishingly active. This dormant or inactive state of the disease may continue for many years, and at last pass off without terminating in any particular local affections. More commonly, however, the scrofulous habit gradually acquires strength, and at last, under the influence of the usual exciting causes, shows itself in its more obvious and active form.

The lymphatic glands along the neck and other parts become enlarged and firm to the touch, in which condition they may remain for years, without either receding or going on to a more active form of disease. In general, however, they pass by degrees into slow inflammation, which at last terminates in suppuration or scirrhus. When they suppurate, which is by far the most common mode of termination, they form chronic indolent ulcers, from which a thin, milky, and somewhat viscid fluid is copiously discharged, and which are always extremely slow in cicatrizing. The cicatrices left by these ulcerations are, in general, easily distinguished from those left by other ulcers. They are peculiarly uneven, irregular, and conspicuous. In connexion with these tumours or ulcerations about the neck, the eyelids and conjunctiva are very apt to become affected with obstinate inflammation; and, in some instances, much irritation occurs in the mucous membrane of the nose and bronchia. In a more advanced state of the disease, the salivary and thyroid glands, as well as the pancreas and other internal glandular parts, become enlarged and indurated. Scabby eruptions appear on different parts of the surface; the extremities of the long bones enlarge; ulcerations occur in the cartilaginous structures; some of the bones become carious; the large joints inflame and suppurate; in some instances the vertebræ become diseased; and occasionally the bones and soft

parts of the nose, palate, and fauces are more or less rapidly destroyed by ulceration. There is, in short, scarcely any part of the body which is not sometimes the seat of the frightful ravages of this affection. The most common forms of scrofula, however, are, *tubercular phthisis pulmonalis; white swelling*, or disease of the hip and knee joints, and *ophthalmia*.

The general progress and duration of scrofula are exceedingly various. In some cases it is developed in infancy, whilst in others the constitutional tendency to the disease remains dormant until the age of puberty, or to a period much later, before it manifests itself in an active state. Some individuals are more or less affected with scrofulous disease of the lymphatic glands during the greater period of a long life, without experiencing any particular sufferings from this source. Much more commonly, however, some one or more of the distressing and fatal consequences already mentioned, ensue before the age of manhood. Although scrofula is vastly more common during childhood than at any other period of life, yet the occurrence of decided scrofulous affections in new-born infants is an exceedingly rare phenomenon. Mr. Lloyd, nevertheless, states, that he found the lungs of an eight months fœtus tuberculous—the mother having died of phthisis pulmonalis; and a few similar instances may be collected from writers on this subject. The manifestations of the scrofulous habit seldom make their appearance before dentition commences.

Causes.—Scrofula, or rather an especial predisposition to this disease, is one of those constitutional habits or tendencies which often occur in children as an *hereditary* diathesis. This, however, is by no means the only source of the scrofulous habit; for that it may be *generated* in individuals originally of sound constitutions, and born of parents perfectly healthy in this respect, by various external influences, admits of no doubt. The causes which are acknowledged to be most frequently and actively concerned in the production of a *predisposition* to this disease, are—

1. *Climatic and atmospheric influences.* It would appear that the influence of *hot climates*, in infancy and early youth, has a considerable tendency to predispose the system to the occurrence of the scrofulous diathesis, from the subsequent influence of a cold, variable, and damp atmosphere. Scrofula is a very uncommon disease in the East and West-Indies; but when the children of Europeans, born in these climates, or even the natives, are brought to reside in the variable climates of Europe and this country, they are in general particularly liable to suffer more or less from scrofulous affections. "We know at least," says Dr. Allison, "that a great majority of the inhabitants of the West and East-Indies, both negroes and Hindoos, are unusually prone to scrofula when they come to tempe-

rate climates."* A cold, humid, and variable atmosphere, more especially when aided by deficient and unwholesome nourishment, appears to have a strong tendency to favour the development of the scrofulous habit. It is from this cause, probably, that in the deep and narrow valleys of Switzerland and Savoy, in which the atmosphere is very variable and humid, certain forms of scrofula are so very common. In Holland, and in some of the marshy districts of England, this disease is said to be peculiarly prevalent.

2. *The impure and confined air* of populous cities also seems particularly capable of promoting the occurrence of scrofulous diseases. It is certain, at least, that in the same amount of population, this malady is vastly more common in large and crowded cities than in the salubrious districts of the country. "It is notorious," says Dr. Gregory, "that the population of our large manufacturing towns—Manchester, for instance—pent up during the day in cotton mills, are of all others most affected with it."

3. *Deficient and unwholesome food*, with the usual attendants, squalidness and mental depression, may contribute to the production of the scrofulous diathesis. Without doubt, however, coarse, indigestible, and irritating articles of diet, when habitually and freely used by young children, have a much more decided tendency to produce this affection, than mere deficient or innutritious aliment. An improper dietetic management of very young children, in relation both to quantity and quality, is probably one of the most common sources of scrofulous affections. By over-distention of the stomach, or the use of heavy, irritating, or indigestible food, dyspepsia and high irritation of the gastro-intestinal mucous membrane will seldom fail to supervene; and as this condition of the stomach and bowels is usually attended with a morbid appetite, more food is habitually taken into the stomach than can be digested, and the gastro-intestinal irritation is thus kept up, until the chylopoietic and assimilating functions, and indeed the whole system, become intimately deranged. Nothing is more common than to meet in children, who have been mismanaged in this way, and who are almost constantly eating from morning to night, glandular swellings along the neck, and scabby eruptions on the head and face, with tense and tumid abdomens, and other symptoms of gastro-intestinal disorder, where, from the helath of the parents, no hereditary taint can be presumed to xeist. *Chronic inflammation, or habitual irritation of the mucous membrane of the stomach and bowels*, is probably much more frequently concerned in the formation of the scrofulous habit than seems to be generally supposed. There are few

* Observations on the Pathology of Scrofulous Diseases, &c. p. 397.

children long affected with what is usually called *marasmus*, who do not subsequently manifest a predisposition to scrofulous affections.

4. *Various diseases* possess a tendency to give rise to the scrofulous diathesis. This is especially the case with measles, scarlatina, and whooping-cough; but it would seem, that it is rather by the influence of cold and errors of diet, during the stage of convalescence from these diseases, that the scrofulous habit is generated, than by any direct tendency in these affections to develope this diathesis. Without specifying any more causes of this kind, however, we may observe, in a general way, that whatever tends *permanently to derange the digestive powers*, and to debilitate the general system during infancy and childhood, is calculated to engender a predisposition to scrofula.

My own observations, though limited in relation to this disease, have led me to the conviction, that disorder of the digestive organs, from whatever cause it may arise, often constitutes the principal source of scrofulous symptoms. Upon this point, the observations of Dr. Carmichael appear to me to possess much interest and value. "I have adduced," he says, "incontrovertible facts, which demonstrate that disorder of the chylopoietic viscera precedes and accompanies the symptoms of scrofula, and that there are the strongest grounds for believing that such disorder is, in a very great majority of cases, the immediate cause of the disease. A defective digestion continued for any length of time, must as certainly produce chyle or blood of a vitiated quality, and unfit to replenish the waste of the body, as the constant use of unwholesome food. A disordered state of the system first ensues, and is followed by various local complaints. It is highly probable, however, that the *gastro-intestinal irritation* which always attends, in a greater or less degree, where the digestive functions continue long in a disordered condition, contributes as much, and perhaps much more, to the production of the scrofulous symptoms in such cases, than the vitiated chyle which is prepared by the stomach."*

It need scarcely be observed, that where there exists an hereditary or natural predisposition to scrofula, the foregoing causes have an especial tendency to excite it into a state of activity; for it is sufficiently obvious, that whatever is capable of *originating* the peculiar diathesis in question, will be still more apt to call it into action where it already exists.

Scrofula cannot be communicated by inoculation, or in the manner of a contagion. Hufeland inoculated healthy children with matter taken from mild scrofulous ulcers, without the

* Carmichael on the Venereal Disease, p. 351.

least perceptible consequences on the health of the inoculated individuals.* Mere local ulcers or scabby affections have, indeed, been known to occur from the frequent application of the matter discharged by ulcerations of this kind. Thus, healthy children who sleep with persons affected with scrofulous scabby eruptions about the head, will sometimes become affected with similar disorders.

Pathologists have expressed a variety of opinions in relation to the essential nature of the scrofulous diathesis; but the most plausible doctrine upon this point is, that the scrofulous habit consists in constitutional or acquired excess of irritability in the lymphatic system, in connexion with a weak condition of the assimilative powers.

Prognosis.—Where the predisposition is hereditary, the chance of subduing scrofula, after it has manifested itself in an active form, is always extremely small. Nevertheless, it is a fact well established, that even where the diathesis is manifestly congenital, moderate cases of the disease not unfrequently disappear entirely about the age of puberty, or after the corporeal development is completed, and the age of manhood has arrived. It must be observed, however, that these epochs in the physical development of the system, are much more frequently attended with results of a very contrary character; for it is precisely at these stages of life, that the scrofulous habit is most apt to pass from a latent to an active state. Similar observations apply to the effects of acute general diseases. Severe febrile affections have been known to remove incipient scrofula, in habits obviously predisposed to the disease; but, as has been already stated, it is vastly more common to find the disease more or less rapidly developed by violent febrile affections—more especially measles, scarlatina, and small-pox. In some instances, the disease slowly continues to develope itself, until the stage of puberty or manhood has arrived, when it remains stationary during the subsequent period of life. In forming a prognosis, as to the probability of effecting a cure, or of a spontaneous subsidence of scrofula, particular regard must be had to the following circumstances.

1. *The nature of the predisposing and exciting causes.* Where a number of causes of this kind co-operate in the production of the disease; and especially where the situation and circumstances of the patient are such as to render an entire removal of them impracticable, the chances of advantage from remedial management must, of course, be exceedingly limited. Among the poor and squalid, who can neither procure proper nourishment, nor protect themselves against the injurious in-

* Ueber die natur, kendniss, und heilart der scrophel krankhert, p. 105.

fluences of cold, it is next to impossible to effect a cure, when the disease shows itself in an active form. I have already stated the greater difficulty of removing hereditary scrofula, than those cases which arise from external influences. 2. *The age of the patient and the duration of the malady.* The younger the patient is, the more easy, in general, will it be to remove, or effectually counteract the progress of the disease. When the disease makes its first *active* appearance after the age of puberty or of manhood, the chances of being able to suspend its progress are but small, and still less to remove the symptoms altogether. 3. *The degree of violence of the disease.* So long as the disease remains in a latent state, and is manifested only by the symptoms which especially characterize the scrofulous diathesis, a reasonable prospect of success may be entertained from proper remedial management. Even so long as the disease shows itself only in the usual form of glandular swellings about the neck, without any indications of tubercular formations in the lungs, a judicious treatment will sometimes arrest the further progress of the disease, and occasionally gradually effect a removal of the scrofulous symptoms. When these tumours become irregular, uneven, immovable, painful, and inflamed, the difficulty of arresting their progress, and still more of effecting their entire reduction, may be regarded as nearly insuperable; and the prognosis will be the more unfavourable in proportion as these tumours are numerous. Suppurated scrofulous tumours when they are situated externally, and not attended with a strong constitutional tendency to the disease—are not, in general, to be regarded either as more dangerous, or difficult of management than mere inflamed tumours, although they are always extremely tedious in their progress, and cicatrize very slowly. Indeed, the *suppuration* of external glandular swellings is sometimes attended with a manifest melioration of the general scrofulous symptoms;* and when suppurations of this kind occur in individuals labouring under slight incipient symptoms of pulmonary tubercles, they should be encouraged rather than suppressed or cicatrized, unless, indeed, they begin to assume very unfavourable or dangerous appearances. When febrile symptoms, cough, and emaciation supervene, all hopes of successful treatment may be abandoned. 5. *The seat of the local scrofulous affections* forms, also, an important consideration in estimating the probable issue of cases of this disease. So long as the disease appears to be concentrated upon the external glandular structures, some prospect of an eventual removal of the malady may, with reason, be entertained; but when the ravages of the

* Bordeu, Recueil des piéces qui on tremporté le prix de l'Acad. Royal de Chirurg., vol. iii. p. 69, as quoted by Richter.

disease occur in deep-seated structures, or internal organs—particularly in the lungs, and mesenteric glands, all ideas of ultimate recovery may be abandoned as entirely hopeless.

Treatment.—The first, and decidedly the most important part of the management of scrofulous affections, is a constant and careful avoidance of the various exciting causes enumerated above. Without an especial attention to proper observances in relation to this point, nothing, or at best but very little, can be effected by remedial treatment. The enjoyment of a pure, dry, and equable air; an attention to proper clothing, so as to obviate as much as possible the injurious influence of atmospheric vicissitudes; a wholesome, abstemious, but nourishing diet; regular exercise in the open air; and cleanliness, constitute the means upon which our hopes of successful opposition to the progress of the malady must chiefly be placed. So long as the disease shows itself only by a general scrofulous habit, without any important local affections, the diet should be simple, but nourishing and digestible; and it is of great importance that the meals be taken at regular intervals, and no more food taken into the stomach at once, than can be easily and completely digested. All kinds of stimulating irritating articles of food must be carefully avoided; and the same observation applies to every species of stimulating drink. The lean parts of tender and digestible meats may be moderately taken at noon; and for children light animal broths; liquid, mucilaginous, or farinaceous preparations; barley, rice, boiled apples, turnips, and milk, constitute proper articles of nourishment. With regard to the clothing of individuals labouring under a strongly developed scrofulous habit, it should be so regulated as to preserve as equable a temperature of the body as possible. Flannel should be worn next the skin, except in very warm weather, when it may be substituted by cotton. The influence of a pure and dry air, and if possible of an equable climate, is all-important to the successful management of this malady. It would appear, from the observations of some writers, that the air along the sea-coast is often peculiarly beneficial in scrofulous affections; but these are advantages which can seldom be enjoyed but by the wealthy, and the majority of scrofulous subjects in large towns cannot even obtain the benefits of a pure country air, so desirable in the treatment of this affection. Inactivity and indolence are to be shunned as decidedly favourable to the progress of the malady. Walking, gestation in an open carriage, or, when the patient is old enough, riding on horseback, should be regularly practised when the weather is favourable. The patient should rise early from bed, and retire seasonably in the evening, and particularly avoid the damp and chilling night air.

With regard to the medicinal treatment—whether for latent

or active scrofula, the prominent indications are—to restore or maintain the integrity of the digestive, perspiratory, hepatic, and intestinal functions, and to support the general energies of the system. Of these indications, the regular maintenance of the action of the bowels and of the liver may be regarded of primary importance. For this purpose recourse must be had to calomel, or blue mass, in conjunction or alternation with proper aperients. Some diversity of opinion is expressed by writers as to the best mode of administering mercurials in this affection; and some even condemn them almost entirely as remedial means in the treatment of scrofula, but most assuredly without just grounds. Undoubtedly much caution is required in the employment of mercury in this disease, or where the scrofulous diathesis exists; for it cannot be questioned, that much mischief is apt to result from the constitutional or salivant influence of this article. Nevertheless, when it is given in small doses at proper intervals, followed by a mild laxative, or even in occasional purgative doses, its effects are often unequivocally beneficial in every variety of scrofulous disease. When the bowels are in a loaded condition and torpid, the treatment should be commenced by pretty active doses of some purgative, and this should be repeated every third or fourth day, until there is reason to believe that the fecal accumulations have been removed. For this purpose, from two to six grains of calomel, according to the age of the patient, should be given late in the evening, and followed next morning by a dose of rhubarb, castor oil, or Epsom salts. When the intestinal canal has been adequately evacuated in this way, it will in general be better to depend on the exhibition of from two to three grains of blue pill every night, with a pretty smart purgative every fourth or fifth day. From such a course of management, in conjunction with proper dietetic regulations, I have in several instances obtained the most decided benefit. Mr. Lloyd gives five grains of blue pill every night, with half a pint of the compound decoction of sarsaparilla twice a day; and if the bowels are not moved during the forenoon, he administers some laxative, so as to procure moderate evacuations. This plan he pursues until the action of the bowels becomes regular, and then goes on exhibiting the compound calomel pill, in five grain doses, every second night for an indefinite time.* The pills I have already frequently mentioned in the course of this work, appear to me peculiarly well adapted as an alterative in scrofulous affections. I have repeatedly prescribed them in cases of this kind with an excellent effect.† The employ-

* A Treatise on the Nature and Treatment of Scrofula, &c.

† R. Massæ pil. hydrarg. ℥ss.
G. aloes soccot. gr. x.
Tart. antimon. gr. i.
M. Divide into twelve pills. S. Take one every night, or second night, according to the state of the bowels.

ment of mercurial aperients should be persisted in as long as the alvine evacuations continue to exhibit an unnatural appearance. Mr. Farr recommends mercurial *frictions*, as being preferable, in his estimation, to the internal administration of this medicine, more especially in children. He directs five grains of the *unguentum hydrargyri fortius* to be rubbed in upon the arm or leg of children from four to eight years old; eight grains in children from eight to twelve years of age, and twelve grains for subjects of from twelve to fifteen years old. "The frictions are to be continued until no portion of the ointment can be observed to stain a clean finger when applied to the part."* Mr. Lloyd makes the following judicious observations in relation to the remedial treatment of scrofula in *children*. "Every one must have observed that the same medicine may act very differently on children even of the same age; and that what purges one violently, will have no effect on another. We should too be very careful not to exhibit violent purges; and we should particularly avoid large purgative doses of calomel, as I am convinced they often produce more general irritation than the evacuation they occasion from the bowels is able to relieve; and that they often so much weaken the stomach, that it is a very long time before it is able to recover its natural powers." To keep up a regular action of the bowels "any of the mild purgatives may be employed; and if one does not appear to have the proper effect, we should desist from its use and substitute another." Although purgative doses of calomel are apt to prove injurious, "we may derive the greatest assistance from exhibiting *alterative* doses of this article." The dose should be varied from a half to one grain, according to the age of the child, and repeated twice or thrice a week.

After the action of the liver and bowels has been in some degree brought to a regular state, benefit will in general result from the employment of the tonic vegetable bitters; and where the digestive functions are much impaired, it will be proper to resort to the moderate use of tonics, in conjunction with the alterative and aperient treatment, as soon as the fecal accumulations have been evacuated by a few brisk purges in the beginning of the treatment. *Tonics* are indeed generally recommended as peculiarly advantageous in counteracting the scrofulous diathesis; but I am inclined to think, that, except where the digestive powers are very feeble, and the mucous membrane of the stomach free from irritation, the active employment of remedies of this kind is seldom attended with

* A Treatise on the Nature of Scrofula, &c. p. 47, 48.

advantage. Most assuredly they are decidedly indicated where the general system is languid and debilitated; but in children, high mucous irritation of the alimentary canal is so frequently present in scrofulous affections, and the general habit is often so irritable and prone to inflammatory excitement, that the indiscriminate use of tonics must be frequently productive of mischief. When the alvine and hepatic functions are restored by alteratives, aperients, and proper dietetic regulations, "the symptoms of debility and relaxation almost always soon disappear, under the use of a nourishing and digestible diet, regular exercise, warm clothing, and the enjoyment of pure air. Most writers speak favourably of *sea bathing* as a means of invigorating the system and counteracting the scrofulous disposition. When the disease manifests itself in the form of a general scrofulous habit, without the presence of local affections, in a state of active progress, benefit may, no doubt, be obtained from this measure; but it does not appear to possess any peculiar powers, as many formerly supposed, in promoting either the discussion of scrofulous tumours, or the healing of the ulcers which proceed from them. (Lloyd.) It is also decidedly objectionable where the scrofulous habit tends strongly to the formation of tubercles in the lungs, or where tubercular matter has already been deposited in the pulmonary tissue; and the same observation applies to the employment of the usual internal tonics. The tonics most generally prescribed are cinchona, gentian, steel, the mineral acids, and the *quinine*. Of these articles, the quinine appears to be particularly useful in certain states of scrofulous affections. Mr. Rennie, in a very excellent paper on the treatment of this disease, states that he has found this preparation more effectual in allaying irritability, and that febrile diathesis which depends on atony of the stomach, than any other tonic he has ever used.* In the first volume of this work, (p. 345) I have already referred to Dr. Mackenzie's observations on the valuable powers of the sulphate of quinine in scrofulous ophthalmia; and in one instance of well-marked scrofula in an infant which lately came under my notice, one grain of quinine given three times daily, after proper evacuants, afforded unequivocal advantage.

Where along with the symptoms of gastric debility, much acidity prevails in the primæ viæ, alkaline remedies should be given, either by themselves, or what is usually more advantageous, in union with weak infusions of the tonic vegetable bitters. *The alkalies* have indeed long been regarded as peculiarly beneficial in the management of scrofulous affections. Mr. Farr strongly recommends Brandish's *liquor potassæ* as a remedy for indurated, inflamed, and suppurated scrofulous tumours about the neck, as well as "in the thickening of the

* London Medical Repository, 1825.

ligaments and periosteum, with caries of the bones." He asserts that he has found this medicine "pre-eminently successful both in arresting the farther progress, and effectually eradicating a disease so destructive to human life." He employs it in connexion with the mercurial frictions mentioned above. A drachm of this preparation is to be given twice a day to a child from four to six years old; to a patient of from six to eight years old, one drachm and a half; and to one over eight years old, two drachms are to be given in any agreeable drink. Its operation is slow, and must be long continued.*

What has been said, applies particularly to the constitutional treatment of scrofula. When the disease appears in an active form, the same general management may still be proper, to a greater or less extent, with additional remedies adapted to the local affections, and varied according to circumstances.

Glandular swellings.—So long as the glandular tumours remain in an *indolent state*, all active local applications should be avoided; for as discussive means they are wholly useless, where these enlargements depend on a scrofulous diathesis, and by their tendency to irritate and inflame, may greatly hasten the progress of the disease. Nevertheless, with the view of preventing the surrounding parts becoming irritated by the pressure of the enlarged gland, it may be proper to bathe the tumours "with salt water, or some other cooling lotion." (Lloyd.) When the tumours become inflamed and painful, however, local antiphlogistic applications are in general decidedly indicated. Leeching, saturnine lotions, and cold applications should be resorted to where the skin over the painful tumour is as yet free from tension and inflammation; but "where several glands have coalesced, forming a large tumour, and the superincumbent skin is tense and discoloured, the best applications are warm emollient poultices." The leeches should not be applied to the inflamed or discoloured skin of the tumours, but to the sound skin immediately surrounding the swellings. "It often happens that when the swellings have arrived at this height an abscess forms; but it also happens that they become indolent, and the pain and tension both subside. The tumour, however, remaining undiminished, will upon examination be found to contain in its upper surface a small quantity of fluid. In this case the application of a blister, to be kept open for a few days, and repeated according to circumstances, will often promote rapid dispersion of the fluid, and indeed sometimes of the whole tumour." In general, however, the application of blisters and other stimuli to glandular swellings, in an indiscriminate way, is calculated to do much mischief. The foregoing observations on the local management of scrofulous

* The formula for preparing Brandish's *liquor potassæ* is given in the Edinburgh Dispensatory, edited by Dr. Dyckman, p. 459.

tumours are drawn from Mr. Lloyd's excellent treatise on this subject, a work to which the reader is referred for much valuable information in relation to the management of this alarming malady.

*Scrofulous ulcers.**—The successful management of scrofulous ulcerations, is always attended with great difficulty. A great variety of local remedies have been recommended for the cure of ulcers of this kind; but without a judicious constitutional treatment, they are rarely capable of procuring more than temporary benefit, and when applied without great discrimination, may readily do a great deal of mischief. Mr. Rennie, who has paid particular attention to the effects of topical applications in scrofulous ulcerations, states that he has found the following compositions highly beneficial in foul and indolent sores of this kind.† When the thickened purple edges of the ulcers overlap the surface, and prevent cicatrization, they should be destroyed with some escarotic, and for this purpose the *kali purum*, or the nitrate of silver, should be employed. Mr. Lloyd recommends the former, in preference to any other applications of this kind. Slightly astringent ointments or lotions generally agree better with scrofulous sores, than such as are more stimulating. A weak solution of the sulphate of copper, in the proportion of four grains to an ounce of water, or of lunar caustic, or the nitrate of mercury, will in general answer all the purposes that may be expected from such applications. Mr. Lloyd considers the diluted citron ointment as the best local remedy for promoting the healthy granulation and cicatrization of scrofulous sores.

* The only signs by which a scrofulous ulcer may be distinguished from one of a different character, are: "its occurring after a suppurated scrofulous tumour—the peculiar dull red, or purple colour of its edges—its remaining indolent for a great length of time, neither increasing nor diminishing in size, and its being attended with that particular state of health which invariably prevails in the scrofulous constitution."—*Lloyd.*

† R. Picis nigræ ℔i.
—— liquidæ ℔iss.
—— resinæ ℔ii.
M. ft. emplast.—Or,

R. Picis liquid. ℔ss.
—— niger. ℔i.
—— resinæ ℔i.
M. ft. emplast.—Or,

R. Picis liquid. ℔iii.
—— resinæ ℔iv.
M. ft. emplas.

To be heated and spread at the time of application, not, however, too thinly. The best thickness seems to be from one to two lines.

Loc. citat. p. 194.

Whatever topical remedies are employed, and whether the local affection consists merely in enlargement of the lymphatic glands, or in ulcerations, it must not be forgotten that our main reliance must be placed on an appropriate constitutional treatment. Besides the general remedial measures already mentioned, and which may be deemed indispensable in all instances of scrofula whatever other medicines may be used, there are a vast variety of remedies which have been strongly recommended for the cure of this affection; and there can be no doubt, that some of them at least may, under certain circumstances or modifications of the malady, occasionally prove servicable.

The iodine has of late years been a good deal used in scrofulous affections; and in certain forms of the disease, it is, without doubt, deserving of considerable attention. In mere local lymphatic tumours its powers are unquestionable; but it does not appear to possess any decided remedial powers in glandular enlargements and ulcerations, depending on a scrofulous habit of body. In scrofulous inflammation of the eyes, it is said, by some writers, to be very useful—a statement which I have not, however, found verified in my own practice, although I have used it a long time, and in efficient doses, in five cases of this kind. For the removal of insulated strumous tumours about the neck, it is decidedly the most effectual remedy we possess. The only three instances of this kind in which I have employed it, disappeared under the use of frictions with the ointment of the *hydriotate* of *potash*.* It should be observed, however, that a preternatural sensibility or irritability of the system; a tendency to irregular determinations, and the presence of internal local congestions; prominent gastric and intestinal derangement; febrile symptoms, general plethora, diarrhœa, a disposition to hæmorrhages, and an inflamed or sensible state of the tumours, are decided contra-indications to the employment of this article, whether used externally or internally.

Mercury.—This article, as has already been stated, is of unquestionable utility, under cautious management, in scrofulous affections, by its tendency to correct the hepatic and alvine functions, and thereby contributing essentially to the restoration of the general health and vigour of the constitution. It has been supposed, however, to possess direct and specific powers over the scrofulous action, by its constitutional influence;

* R. Hydriod. potassæ ℈ii.
Axungiæ ʒiss
Liq. potassæ caust. g. tt. v.
M. ft. ungt. Of this ointment, a portion about the size of a small nutmeg should be rubbed in upon the tumour twice daily.

but for this opinion there does not appear to exist any good foundation. It is, nevertheless, true, that in old and obstinate ulcerations of a scrofulous character, minute doses of corrosive sublimate, in union with some alterative ptisan, such as the compound decoction of sarsaparilla, will sometimes prove surprisingly beneficial. I have succeeded in curing several remarkably severe and obstinate cases of this kind, unequivocally of a scrofulous nature, by the continued employment of a tenth of a grain of this mercurial, thrice daily, in conjunction with the free use of sarsaparilla decoction: and there are, perhaps, few practitioners who have not witnessed its occasional good effects in similar instances of the disease. Except so far as it is tends to correct the actions of the liver and bowels, this article does not appear to possess any direct power of dispersing scrofulous tumours; but, on the contrary, when its influence is carried to the extent of producing a manifest general mercurial action in the system, it not unfrequently accelerates the progress of these enlargements, and deteriorates the general habit of the body.

Narcotics.—Most of the officinal narcotic extracts were formerly much extolled as remedies in every variety of scrofulous affections. The confidence of the profession in their powers, has, however, long since, in a great measure passed away; and although some relief may occasionally be obtained from the employment of these articles, their effects on the disease rarely amount to more than a mere palliation of its symptoms, or a temporary suspension of its progress. The most celebrated of these articles, are—conium, belladonna, hyoscyamus, and solanum dulcamara; but there are a great variety of other vegetable remedies of a similar character, that have been particularly praised for their occasional good effects in scrofula. Thus, *tussilago farfara* is much extolled by Hoffman; and Meza, strongly recommends *digitalis* in small doses.* The expressed juice of *fumaria; chærefolium; beccabunga; sonchus; lactuca; marubrium album*, and *taraxacum*, have all had their advocates as remedies in this disease. Of all these articles, however, *conium* is decidedly the best; and which, in combination with small doses of muriate of mercury, I have known to do much good in scrofulous ulcerations.

The muriate of barytes, some thirty years ago, was much in vogue as a remedy for scrofula. It was introduced to the particular notice of the profession by Dr. Crawford†; and Hufeland, soon afterwards, published a small treatise with

* De digital. purpur ejusque usu in scrofulous medico. Jenæ, 179.

† Duncan's Medical Comment. vol. iv. Dec. ii. p. 433.

cases illustrative of its remedial powers in this disease.* Many other writers have published statements favourable to the employment of this article; but general experience did not confirm these accounts; and it has long since sunk almost into total, though, as I have some reason to think, not entirely merited neglect. I have employed it in several cases of scrofulous ophthalmia with unequivocal advantage, and I am persuaded that in some instances, at least, its powers might be very beneficially called into aid in the management of this intractable malady. It is slow in its effects, and must be used for a considerable time, before any obvious amendment occurs in the disease. For the mode of employing it, the reader is referred to page 344 of the first volume of this work.

Of a similar character is the *muriate of lime*,—an article which at one time had considerable reputation as a remedy in scrofulous complaints. Thirty drops of a solution of one drachm of this salt to two ounces of water, is to be taken every three hours, and the dose gradually increased until it begins to affect the stomach. Fourcroy, Beddoes, and Hufeland speak very favourably of its powers. Twenty years ago, I saw it employed in a case attended with several very large scrofulous tumours on the neck, and an ulcer in the left axilla, and although it did not accomplish a complete removal of the external affections, its beneficial influence was very manifest. In the early period of my practice, I employed this article in a considerable number of instances of scrofulous ophthalmia, and eruptions about the head in young children, and, as it appeared to me, with some advantage in several cases. General experience, however, has not established its usefulness, and it is now entirely neglected as a remedy in this affection.

Antimony, by its tendency to counteract inflammatory action and to keep up the regular cutaneous exhalantion, is a highly useful medicine, under proper management, in certain varieties and stages of scrofulous affections. Under the head of phthisis pulmonalis, I have already spoken of its usefulness in counteracting the progress of tubercles in the lungs. This article is particularly useful when the glandular swellings manifest a tendency to pass into a state of inflammation: and in minute doses, it will co-operate very advantageously, with warm clothing, to prevent the general scrofulous diathesis from passing into the active forms of the disease. That it possesses any direct or specific influence over the scrofulous action, cannot indeed be admitted; but by its general operation in promoting the secretions and opposing an inflammatory tendency in the system, it is calculated to do much good in affections of this kind. Weikard and Richter recommend the following combi-

* Volstaend. Darstell. d. kraefte u. anwendung d. salzsaur. schwererde, &c.

nation, as often particularly useful in scrofulous cutaneous eruptions.*

Some of the German writers speak very favourably of the effects of large and frequent doses of *assafœtida* in scrofulous caries of the bones. Schmucker, in particular, has published a very favourable account of its powers in affections of this kind. Where the general circulation and habit is languid, benefit may be obtained from this remedy; but its beneficial influence in cases of this kind, appears to depend solely on the general excitement and invigoration it imparts to the system. Richter recommends the following formula.† Of the importance of *tonics*, in conjunction with aperients and the cautious employment of mercurials, for counteracting the scrofulous diathesis, I have already spoken, and I need here only repeat, that although unquestionably of primary consequence where the system is languid and the digestive powers feeble, they will not only be useless, but often prejudicial, where the general habit is phlogistic, and the alimentary canal in a state of high irritation. During the active progress of glandular swellings, that is, whilst they are in a state of inflammation and suppuration, tonics can rarely be given without mischief. After the active state of the inflammation has terminated in foul and languid ulcerations, they may, in general, be used with propriety and advantage. In old scrofulous ulcerations, attended with general debility and relaxation, the employment of large doses of cinchona, quinine, or steel, is sometimes an indispensable auxiliary to the local applications and general alterative remedies that may be deemed proper. The following combination forms an excellent tonic in old scrofulous ulcerations, or in general where tonics are indicated in this affection, at any period of its course.‡

* R. Antimon. crude alcoholis ℥vi.
G. guaiaci ℥ss.
Extract. aconit. ℈i.
Sacchar. albi. ℥x.
Mucilag. g. arab. q. s. M. To be made into boluses of xv. grains each. One of these is to be taken four times daily by an adult.

† R. Antimon. sulphuret. nigr. ʒii.
G. assafœtid. ʒiii.
Extract. cicutæ ʒss.
——— aconit. gr. xv. M. Divide into four grain pills. S. Take from four to five pills, twice or thrice daily.

‡ R. Ferri limatur. vel pulver. ʒiii.
P. rhæi ʒii.
G. ammoniæ ʒii.
Tart. antimon. gr. iii. M. Divide into three grain pills. S. Take four pills three times daily.—Or,

R. Ferri limatur. ʒii.
G. assafœtid. ʒi.
G. aloes socc. gr. x. M. Divide into sixty pills. S. Take two, four times daily.

The *aromatic tonics*, says Richter, deserve much attention, although greatly neglected in scrofulous affections attended with general relaxation and debility, and where the ulcers are foul and indolent. Of course, where there is a disposition to inflammation they are decidedly objectionable. Weikard particularly recommends *calamus;* Richter speaks favourably of *cloves;* and Hufeland mentions a decoction of *rad. helenii; cort. winteranus; cort. et lig. sassafras;* and where the general habit is very torpid, Thilenius advises the use of the *essential oil* of sassafras, as often peculiarly beneficial.

BRONCHOCELE—GOITRE.

This very remarkable disease consists of a chronic enlargement of the *thyroid gland.* It commences with a small tumour on one or both sides of the larynx and trachea, which gradually increases in size, until, in the course of years, it acquires, in many instances, an enormous bulk, occupying the whole anterior part of the throat, from ear to ear, and projecting considerably beyond the chin, and occasionally even extending down to near the middle of the chest.*

In the early period of the disease, the tumour is always soft, elastic, and spongy to the touch; the colour of the skin natural, and moveable over the enlarged gland. In the progress of the enlargement, however, the tumour becomes more and more firm, until at last, in severe cases, it acquires great density and firmness in certain parts, whilst small portions retain their original soft and spongy state. Although indolent or free from pain or tenderness during the early period of its progress, and in many cases of moderate size always so, yet in the majority of instances, where the tumour becomes large and indurated, transient pains are at times felt darting through the enlarged gland, at the same time that the skin assumes a slightly red or copper colour, and the veins of the neck become large and turgid. No inconvenience whatever is experienced from the disease while the tumour remains soft and of a moderate volume; but when it acquires a large size, it generally gives rise to more or less difficulty of respiration, and a slight change or loss of clearness of the voice. In some cases the enlargement extends inwardly, so as to cause considerable pressure on the œsophagus, and large blood-vessels in the neck, occasioning difficulty of swallowing, and, at times, great anxiety and palpitations of the heart, throbbing of the carotids, and dangerous, and even fatal congestions in the brain. The progress

* Alibert, Foderé, Larrey, Keate, and Sir Robert Wilson, have all related instances of this kind.

of the enlargement is sometimes very irregular. The tumour will, in some instances, remain stationary for a considerable time, and then rapidly increase in size for a short period, and again continue nearly in the same state, or even decrease, until it again rapidly augments in volume. More generally, however, the progress of the tumour is very gradual and regular.

In many localities where bronchocele prevails endemically—particularly in the deep valleys of the Alps, the disease is very frequently attended with a stunted and deformed development of the body, and a corresponding deterioration of the intellectual faculties. It is thus, that amidst these magnificent and beautiful scenes of nature, man alone is doomed to dwindle—to sink, under the inevitable influences that surround him, from his noblest prerogatives, to the lowest state of corporeal and intellectual deterioration. The unfortunate beings who are affected in this manner,—and in some situations, the majority of the native inhabitants are more or less affected—are stunted in growth, with enormous heads, tumid necks, and manifest a degree of mental hebetude which, in aggravated instances, amounts to absolute idiotism. This combination of afflictions is called *cretinism*, and the unfortunates themselves, *cretins*. Bronchocele has, however, no necessary connexion with the general debasement of the moral and physical constitution of man; for, in many parts where goitre is exceedingly prevalent, the development of mind and body is not impeded by the disease, or the endemic cause upon which it depends. Nevertheless, from the almost inseparable connexion of these affections, where cretinism prevails, we can scarcely doubt of their dependance on some peculiar modification of a common cause.

The internal structure or substance of a goitrous tumour, varies according to its age, or stage of progress. Recent enlargements of this kind, consist generally of a gelatinous mass, or a cellular structure, containing a glutinous fluid. Sometimes they exhibit a soft and spongy texture, with large cavities or cysts dispersed throughout their structure, containing a serous fluid. Old tumours sometimes contain masses of ossified or cartilaginous substances, imbedded in a soft, friable, or adipose-like matter,* and in some cases the goitrous tumour is filled with dark blood. Morgagni found tumours of this kind composed almost entirely of a number of cysts filled with a viscid transparent fluid; and occasionally the whole gland resembles a *mellicerous*, or *steatomatous* tumour. Sometimes the goitrous enlargement consists almost wholly of a congeries of varicose veins.†

* Morgagni, Benetis, Baillie, Richter.

† Foderé, Essai sur le goitre et le cretinage, § 8.

Bronchocele very rarely enters into suppuration; and the occurrence of active inflammation and ulceration is equally uncommon, and hardly ever takes place spontaneously, or without some external injury or irritating applications. Nevertheless, instances of spontaneous suppuration have occurred; and this has, in some cases, eventuated in a complete cure of the affection. Petit has mentioned examples of this kind. Alibert has recorded a case, where an enormous strumous enlargement of the thyroid entered into suppuration, and disappeared after the discharge of above five pounds of purulent matter, (loc. cit. p. 467.) Suppuration does not, however, always, or even generally terminate thus favourably. Sometimes the abscess ulcerates into the trachea, and causes suffocation. Instances of this kind are related by Morgagni, Valsalva, Lieutaud, Baillie, and Portal.

Diagnosis.—Although generally sufficiently distinctive in its external character, goitre, when not very large, and situated only in one of the lobes of the gland, may on superficial examination be mistaken for aneurism of the carotid artery, and still more readily with sarcoma of the trachea or neighbouring glands; and, perhaps, with dilatation of the internal jugular vein. When the tumour accompanies the motions of the larynx and trachea in the act of swallowing, and is moveable, wholly insensible, soft and spongy to the touch, and free from pulsation, we may conclude that it is of a strumous or goitrous character. When, however, the tumour is situated on one side of the neck, directly over the carotid, a pulsatory motion will be communicated to it by this artery, and in this case, much difficulty may occur in the diagnosis. An instance is mentioned in the *Diction. des Sciences Med.*, where a tumour in the neck was pronounced to be aneurismal, by several eminent surgeons, which was afterwards found by Boyer to consist entirely of an enlarged lymphatic gland in the neck. An interesting example of this kind occurred in this city. A tumour on the neck was regarded as aneurism of the carotid by Drs. Griffitts, Chapman, and Dorsey; which, upon dissection by Dr. Parish, was subsequently ascertained to be composed wholly of an enlargement of a portion of the thyroid gland.*

From scrofulous enlargements of the glands of the neck, goitre may in general be distinguished by the position of the tumour—and the firmness and greater proneness to inflammation and suppuration of the former, than the latter form of glandular disease. Mere dilatation of the internal jugular vein is also liable to be mistaken for bronchocele; but the

* See an essay on goitre, by Dr. W. Gibson, in the first number of the Philadelphia Journal of Med. and Phys. Sciences.

former may in general be distinguished from the latter by its situation, which is usually just above the sternum; and by its softness and compressibility, its undulating or pulsatory motion, and the general turgescence of the vein, and the sudden return of the tumour when pressure is removed.

Etiology.—One of the most singular circumstances in the history of this affection is its permanent and extensive prevalence in certain localities, often of limited extent, whilst the inhabitants of the vicinal districts are almost wholly exempt from the malady. In no part of the world is the disease so prevalent, and so distressing in its character, as in some of the valleys of the Alps and Appenines. In certain districts of Switzerland and Savoy, almost the whole of the indigenous population are more or less affected with goitrous enlargements. In the valley of the Rhone, at Martigny, St. Maurice, Aigle, Villeneuve, Bourg, Lucerne, and at Dresden, and in the valleys of Piedmont, this disease is extremely common.—Goitre occurs also extensively in various parts of Asia—particularly in Chinese Tartary, and in Hindostan; and in certain districts in Africa it is said to be very common. In England the disease occurs very frequently in certain mountainous districts of the counties of Derbyshire, Buckinghamshire, Surry, and Norfolk. In our own country also there are localities in which goitre is of frequent occurrence. At Bennington, Chittenden, Camden, Sandgate, Windsor, and Chester, in Vermont, bronchocele is very common. In the state of New-York it is frequently met with at Oneida, the German Flats, in the Onondago valley, in the township of Manlius, at Brothertown, in the neighbourhood of Angelica in Alleghany county, and in various other localities in the north-western district of the state. In Pennsylvania it occurs not unfrequently at Pittsburgh, at Cannonsburgh, Brownsville, and along the Alleghany, Sandusky, and Monongahela rivers. It is met with in Virginia at Morgantown, and on the banks of the Cheat river.

Where the disease prevails endemically it occurs at all periods of life, from infancy to old age. Saussure, indeed, asserts, that those who remain wholly free from the disease until they have passed the tenth year, very rarely, if ever afterwards become affected with it: and Kortum states, that it never occurs in infants, and in adults of the male sex. These assertions are, however, wholly unfounded, and have been abundantly contradicted by later observations.

Hacquet, for instance, states that he has met with goitre in infants; and he has known the disease to come on after the fiftieth year of age.* It is even asserted, that infants have been

* Neue Physic. Politische Reise, durch die Dacischen und Sarmatischen oder nord. Karpathen. p. 129, as quoted by Richter.

born with goitrous tumours. Foderé,* Consbruch†, and Sterndale‡ have related instances of this kind. Iphofen, however, contends that true congenital bronchocele never does take place, and that the cases which have been recorded as such, were in all probability lymphatic tumours of a different character,§ or simply an unusually developed state of the thyroid gland. In general, when the disease occurs in females after marriage, it is during the state of pregnancy that the tumour first makes its appearance. (Foderé.) It would appear that cold weather has a tendency to retard the increase, or even to diminish goitrous tumours; for it is by no means uncommon to find the enlarged gland perceptibly smaller during the winter than in the warm months of summer. Goitre occurs also in the inferior orders of animals—particularly in sheep, horses, and horned cattle.¶

In relation to the *remote causes* of goitre, a great variety of opinions have been advanced; but our knowledge upon this interesting subject amounts, as yet, to little more than to some very general facts, and a few plausible conjectures. It has been supposed that the habitual use of water, impregnated with limestone or other calcareous substances, is the principal cause of this affection (Coxe, de Luc); and this appears to be the general opinion in Switzerland and Savoy. This, however, is satisfactorily contradicted by the fact, that goitre prevails in districts where not the smallest portion of calcareous matter occurs in the water used by the inhabitants; and in many localities, where the water is highly charged with limestone, this affection is wholly unknown. (Barton. Iphofen.) Another opinion still entertained by many is, that the use of *snow water*, abounding in mountainous districts, is the cause of this malady, (Darwin, Selle, Percival, Desgenettes); but there are many facts which conclusively contradict this view of the causation of the disease. Thus, in the valley of Chamouni, "where the water is nothing else than the droppings of snow water from Mont Blanc," bronchocele is but very rarely seen; "while on the other side of the Col de Balme, in the valley of the Rhone, we see hardly any thing else than goitre and cretinism. Again, in Lapland, where snow water is constantly used, goitre is a very uncommon affection; and on the contrary, the disease is known to prevail extensively in some parts of Africa, and in other warm climates, where snow and ice scarcely ever occur—

* Traite du Goitre et du Cretiorisme, p. 18.

† Klin. Taschenbuch. T. ii. p. 281.

‡ Lond. Med. Repository, vol. x. p. 200.

§ Der Cretinismus Philosoph. und Med. Untersucht. Dressten, 1817, p. 4.

¶ Barton's Memoir on Goitre. Dr. Alexander Coventry—in the New-York Medical and Physical Journal.

as in the island of Sumatra.* The following observations made by Dr. Richardson, who accompanied Captain Franklin in his voyage to the Polar sea, is decisive on this point. "Bronchocele is a common disease at Edmonston. The disorder attacks those only *who drink of the water of the river.* It is, indeed, in its worst form, confined almost entirely to the half-breed women and children who reside constantly at the Fort, and make use of river water, drawn in winter, through a hole in the ice. The men, from being often from home on journeys through the plain, where *their drink is melted snow*, are less affected; and if any of them exhibit, during winter, some incipient symptoms of the disease, the annual summer voyage to the sea coast generally effects a cure. The natives who confine themselves to snow water in winter, and drink of the small rivulets which flow through the plain, in summer are exempt from the attacks of this disease." Iphofen (l. c. p. 50) maintains that bronchocele is produced by the use of water entirely devoid of carbonic acid gas, but this, like the other opinions mentioned, is not sufficiently supported by facts to entitle it to any particular attention.

Many writers have attributed this disease to the use of *particular articles of food.* Thus, Dr. Drug, who saw a great deal of goitre in Derbyshire, conceives that goitrous affections are very generally produced in that district, by the use of *sour oat cake*, and other innutritious aliment, more especially inferior potatoes, &c. Magneti and Roncalli, also have ascribed the disease to the abundant use of heavy and indigestible articles of food, particularly to fat and oily substances and chesnuts, which in some parts of Switzerland, constitute a large proportion of the ordinary nourishment of the peasantry. Its dependance, however, on causes of this kind, is decidedly contradicted by a variety of facts bearing directly on this point. Thus, of different contiguous localities, we find the disease extremely prevalent in some, whilst in others it occurs but seldom, although the general diet and mode of living is the same. Besides the foregoing causes, various others have been mentioned as the probable source of this affection; such as the inordinate use of vinous liquors; the repulsion of cutaneous diseases; mechanical injuries of the thyroid gland by carrying heavy burthens on the head, &c.

The opinion that the disease depends on certain *atmospheric causes*, has received many advocates; and there are various circumstances, indeed, which favour this general view of its origin. It is supposed by some, that a dense, stagnant, and humid atmosphere is the ordinary source of the disease; and this idea is countenanced by the circumstance that goitre is

* Marden's Geschichte und Beschreibung von Sumatra, p. 64.

known to prevail extensively in many situations where the atmosphere is constantly loaded with moisture, as in the deep and shady valleys of the Alpine countries. (*Foderé, Saussure, Chavassien, d'Audebert.*) Foderé asserts that the frequency of the disease is found in many localities to bear a pretty close relation to the hygrometrical states of the atmosphere. In many deep, damp, and woody valleys, goitre is extremely prevalent; but in proportion as we ascend towards the more elevated and dry situations on the sides and tops of the adjacent mountains, the disease becomes less and less frequent. It is well known, moreover, that when young persons affected with goitre remove from the valley in which the disease was contracted, to high and dry situations, the tumour almost always becomes considerably diminished in size, and in many instances disappears altogether.* It is even asserted, that in some foundling hospitals, where the air was suffered to become damp and malarious, goitre has been known to occur endemically—and that it disappeared again, after the air was rendered purer and dryer.† These facts certainly appear very strongly to countenance the opinion that the disease depends on atmospheric causes; but they may be used with equal propriety as arguments in favour of the dependance of the disease on some peculiar impregnations of the water used in the localities where it prevails. It must be observed, too, that bronchocele is known to prevail extensively in some elevated situations, where the air circulates freely, and is not charged either with humidity or paludal exhalations. Thus, at Annaberg, at Marienberg, and in several other localities pointed out by Iphofen, (loc. cit. p. 42,) the air appears to be pure and dry, and yet goitre is a very common affection. Again, it is unquestionable that there are a vast number of deep valleys in every country, in which the air is stagnant, and particularly loaded with moisture and terestrial exhalations, but in which goitre is nevertheless entirely unknown.

Humboldt advanced the opinion, that a deficiency of electricity in the atmosphere, is intimately concerned in the production of endemic bronchocele;‡ and the same doctrine is strenuously advocated by Iphofen. It would appear from the experiments and facts adduced by the latter writer, that in all the situations where goitre prevails endemically, there is a constant deficiency of the electric fluid in the atmosphere; and he asserts, that when goitrous tumours are lessened or removed by a change of residence, from the low and humid situations in which they were produced, to elevated and dry districts, it is

* Revue Edinburgh Med. and Surg. Journal, vol. v. p. 53.
† Richter Chirurg. Biblioth. Bd. viii. p. 500.
‡ Ueber d. greizte Muskel. und Nervenfassern, B. ii. p. 208.—Richter.

chiefly by the abundance of electricity which the atmosphere contains in the latter situations, that the salutary effect on the disease is produced.

Notwithstanding the plausible facts that may be adduced in evidence of the aerial character of the remote causes of goitre, it appears to me much more probable, that it is not in the atmosphere, but in the *water* of goitrous districts, that we must look for the cause of this malady. It cannot, indeed, be maintained that it is either snow water, or calcareous matter contained in the common water, that gives rise to the disease; but there are many facts, which appear to me, very clearly to show that the origin of the disease is connected with some peculiar condition of the water habitually used in those districts of country where the disease prevails. The account given of a goitrous family near Fort Schuyler, in the state of New-York, by Dr. Coventry, demonstrates very conclusively the correctness of this view of the etiology of goitre. This family resided on the banks of a small stream, running through a bed of schist and slaty gravel. It consisted of seven members, all of whom, with but one exception, were affected with bronchocele. They were in the habit of using the water of the brook for all culinary and other purposes. In the spring of 1798, Dr. Coventry settled within three-quarters of a mile from this family. "There being no well, and prepossessed with the idea of the hereditary nature of the disease," says Dr. C., "my family also used the brook-water; when, towards the approach of winter, to my no small mortification and vexation, I perceived an evident thickening in the necks of my daughters. Then I first began to suspect the water of Regel's creek. The next summer I sunk a well, and since we commenced the use of it none of my family has been subject to goitre." The goitrous family removed to Onandago, and became entirely freed from the disease.*

Dr. Johnson, in relation to the etiology of goitre observes, that "the upper Rhone, where it falls into the lake Geneva, is turbid, even to whiteness, with the *attritus* which its tributary

* Dr. Coventry adds the following highly interesting facts. "A few years after this I leased a small house, standing near the brook, to a Mr. Walworth, who had a son about twelve years old. This lad, in the course of a few months, exhibited appearance of bronchocele; he was sent from home, and his neck returned to its natural size; but in the succeeding season began to enlarge, and the family moved away. "About the autumn of 1802, I put a small flock of sheep into a pasture, through which the stream ran; next spring one lamb proved goitrous; the succeeding season every lamb had a swelled neck, and seven out of eight died. My next neighbour had sheep in an adjoining pasture, which was watered by a spring; his sheep had no distemper."—*New-York Med. and Phys. Jour. June*, 1824.

Alpine streams carry along; but its waters, while nearly quiescent in the lake, become clear, and pass through the city of Geneva like translucent streams of bluish crystal. Among those who inhabit the banks, and drink the waters of the upper or turbid Rhine, there are twenty cretins and goitres, for one that can be seen on the banks of the lower or filtered Rhone."* Dr. Coventry seems to think it probable that the substance with which the waters that give rise to this disease is impregnated, consists in aluminous particles. In dry seasons the surface of the schist, after having been acted on by the air, "becomes covered with a white efflorescence, which, on examination, is found to be alum." The material which furnishes the alum manufactured near Glasgow, in Scotland, is found "in the schist rock which forms the sides, bottom, and roof of an exhausted coal-pit." This observation receives support by the fact, that in certain districts in Europe, where alum is extensively manufactured, although elevated and dry, bronchocele is extremely common. (Iphofen.)

Whatever may be the remote cause of goitre, Dr. Gibson thinks, that "the disease arises immediately from an obstruction of the *tracheo-thyroidal* passages of Borden—of the openings communicating with the sacculus laryngeus and the thyroid, and of other passages with which we are unacquainted." "I am inclined," he says, "to draw this conclusion from the circumstance of a watery fluid being found to occupy naturally the cells of the thyroid gland—from this fluid being increased in quantity in almost every goitrous tumour—and from the passages of Borden being much smaller in the first dissection I made of bronchocele than they are usually met with in subjects without such disease. This is a mere conjecture; neither is it original—but was advanced by one of the older writers on surgery." (Loc. cit. p. 65.)

Treatment.—Since the discovery of the extraordinary remedial powers of *iodine* in bronchocele, it is scarcely necessary to pay any attention to the various other means that were formerly resorted to for the cure of this affection; for it can scarcely be presumed, that where the judicious employment of iodine fails, there can be any particular advantage obtained from any other remedies at present known. Although but a few years have elapsed since this remedy has become generally known to the profession, a very great number of instances of its successful employment in this affection have been reported. Dr. Manson has given a tabular statement of 116 cases of bronchocele treated by this article; and of this number, seventy-seven were completely cured, eleven much relieved, and but two not relieved; the remainder were discharged for non-attendance, or remained, im-

* Med. Chir. Rev. April, 1825, p. 443.

proving under the treatment.* Dr. Manson used the iodine both internally, and externally in the form of a liniment,† rubbed into the tumour. In individuals of a very irritable or plethoric habit of body—or where the stomach and bowels are in a deranged condition, the free and protracted internal employment of iodine will sometimes give rise to various unpleasant symptoms, such as "headach, giddiness, sickness at the stomach, with some degree of nausea, languor, and inaptitude for exertion." These affections, however, will in general soon disappear, by suspending the use of the medicine for three or four days; where the inconveniences occasioned by the iodine are moderate, it will be sufficient to exhibit it in diminished doses. It is evident, however, from the experience of Dr. Manson and others, that the tendency of this article to produce unpleasant effects has been much exaggerated by some writers. Dr. M. states that no inconvenience whatever resulted from the internal use of this article in any of the cases in which he employed it; but on the contrary, it generally appeared to produce a cordial and tonic effect, unless it was given in too large a dose. Indeed "patients generally found themselves in better health and spirits after a course of treatment with the iodine, than they had previously been for years; and this observation applies not only to those who laboured under bronchocele, but also to those who laboured under other diseases in which iodine was exhibited." I have used this medicine in perhaps twenty cases, both internally and externally in full doses, continued in some instances for six or eight weeks, without having ever observed any unpleasant consequences to result from its operation. It cannot be doubted, however, that in certain habits of body, it may give rise to unpleasant and even injurious effects, but this may be said with equal justice of every important article of the materia medica. Dr. Kolley, in a very interesting memoir on the medicinal powers of iodine, observes, as the result of his experience, that iodine is incomparably the most powerful remedy in goitre which has yet been discovered; but in order to employ it successfully, it is necessary: 1, that the disease be confined to the thyroid gland; 2, that the tumour be devoid of a scirrhous or sarcomatous character; 3, that the disease be not inveterate, or of very long standing; 4, that the general health be not particularly deranged or impaired; and 5, that the goitrous tumour be free from inflammation. Where these conditions are not present, the iodine will almost invariably effect a cure. It would appear, that in general this remedy is most apt to give

* Medical Researches on the Effects of Iodine in Bronchocele.

† R. Liniment sapon. ℥i.
Tinct. iodii ℥i.
Misce. This was rubbed into the tumour once, and in some cases twice, daily.

rise to unfavourable effects, where there is a tendency to congestions of the head and of other internal organs; and Dr. Kolley observes, that individuals of a robust, muscular, and what is usually termed atrabilious habit, do not in general bear the action of iodine without more or less inconvenience—particularly when unaccompanied by the use of laxatives. "In such constitutions, the tendency to local congestion increases; the head becomes confused, and cephalalgia often rises to such an extent as to threaten delirium." A deranged state of the digestive organs, all local inflammatory affections, diarrhœa, and phthisis pulmonalis, are unfavourable to the beneficial operation of this remedy.*

In general, the *external* application of the iodine in the form of an ointment or liniment, will procure all the benefit that can be derived from this remedy in goitre. Mr. Coindet has entirely left off its internal employment, and recommends frictions on the tumour with the following ointment.† Internally, ten drops of a tincture made by dissolving forty-eight grains of the iodine in an ounce of alcohol, may be given twice daily.

Of the various other remedies that have been particularly recommended for the cure of bronchocele, it will be sufficient merely to mention the following: *Burned sponge;* this article, no doubt, owes its remedial powers, in this affection, to the small portion of iodine it contains. It is given in doses of from a scruple to a drachm daily, and will occasionally remove goitrous tumours. *Calcined egg shells;* the external application of *sea water*, (Lieutaud); *hepar sulphuris*, (Selle, Foderé); *the vinegar of squills; kermes mineral; belladonna;* and especially, *conium maculatum; digitalis;* burned *boletus suaveolens*, in union with small portions of muriate of soda and lime; *the muriate of barytes;* and the different preparations of *mercury* and *antimony*. Externally, repeated *blistering;* frictions with stimulating liniments; mercurial ointment; various stimulating plasters; cataplasms, or bags of emollient herbs, applied over the tumour; and compression, have all been recommended, and occasionally used with advantage in this affection.

In some cases, however, the disease bids defiance to the powers of medicine, and the tumour goes on increasing until it becomes so large as to endanger suffocation, or some other fatal consequences. In instances of this obstinate and dangerous character, the passage of a seton through the tumour appears to promise more success than any other mode of treat-

* Reflexions et Observations sur l'Emploie d l'Iode en Medecine. Par le Docteur Kolley.

† R. Hydriod. potassæ ℈ii.
Axungiæ ℥iss.
Lig. potassæ caust. gr. iv.
Ft. ungt.

ment. Dr. Quari has published an interesting memoir on the treatment of this affection by setons ;* and Mr. Copeland Hutchinson has adopted this practice with complete success.† "He passed a long and narrow seton needle, armed with half a skein of silk thread, obliquely through the substance of the gland from the left lobe upwards. leaving a space of nearly two inches from the entrance and escape of the instrument." Mr. Hutchinson refers, also, to a case successfully treated in this way, by Mr. Thompson ; and to another one by Mr. James, of Exter and Devon Hospital. An instance of the successful use of the seton by Mr. Lyford, is related in the Med. Chir. Rev. for July, 1827.

Extirpation has also been resorted to, and, it is said, in a few instances, with success. Foderé refers to some cases where tumours of this kind were removed by excision ; and Dr. Harris has given an account of two instances of the successful extirpation of bronchocele. It must be observed, however, that this operation is always attended with much danger ; and many cases might be collected from writers in which the attempt to extirpate bronchocele, was followed by fatal hæmorrhage, or some other disastrous consequences.

There is another operation which has been performed with more or less advantage by several surgeons :—the *tying up the thyroid arteries*. The operation was first performed by Mr. Blizard, of London. The tumour, in the instance he relates, diminished one-third in size, in the course of a week after the operation ; but an attack of hospital gangrene, followed by repeated secondary hæmorrhages, finally destroyed the patient's life. Dr. Jameson, of Baltimore, also took up the superior left thyroid artery in an inveterate case of goitre, with the effect of considerably diminishing the size of the tumour ; and other instances of this operation attended, with still more decided success, have been recorded.

SCORBUTUS.

Scurvy.

Scurvy does not appear to have been much observed until about the middle of the sixteenth century. Soon after that period, however, it became an object of particular attention, and in conformity with the prevailing notions concerning the

* Medico Chirurg. Transact. vol. x.
† Medico Chir. Rev. March, 1822.

agency of morbid humours in the production of diseases, almost all chronic affections—gout, rheumatism, hypochondriasis, and particularly cutaneous affections, were ascribed to a scrobutic disposition and acrimony of the blood. Masked scurvy was supposed to be present in almost every variety of acute and chronic disease; and there has perhaps never been an opinion in pathology, which has been carried to so injurious an extent as the doctrine of a latent scorbutic humoral diathesis.* At present, however, the term is properly restricted to a peculiar form of the disease, which is undoubtedly connected with a morbid condition of the blood, arising from a want of proper nourishment, or other causes tending to derange the assimilating functions. This affection seldom occurs in its more aggravated form, except among seamen; although slight, and occasionally even very severe cases, are met with in individuals, deprived of wholesome nourishment and a pure air, who have always resided on shore.

Symptoms.—The disease commences with an unusual degree of lassitude and want of muscular energy; a feeling of stiffness of the knees and feet is experienced, attended with depressed spirits, and a great disinclination to corporeal exertions. The muscular weakness gradually increases, and the respiration becomes short and panting on the slightest bodily exertions. The countenance exhibits a pale and sallow, or lead-coloured and bloated appearance; the skin is dry, and sometimes peculiarly tense and shining, and separates in small scales on different parts of the body. Sooner or later, brown or livid spots make their appearance on the surface, generally first on the legs, then on the thighs, and last on the arms and abdomen, but they very rarely appear in the face. In connexion with the appearance of these maculæ, œdematous swellings of the feet and legs occur; and in hot climates extensive ansarcous effusions sometimes ensue without any of the ordinary scorbutic blotches. Simultaneously with the occurrence of the spots on the skin, and in many instances at an earlier period, the breath becomes fetid, and the gums tender and spongy, and extremely apt to bleed on being even lightly touched. The patient complains of a putrid taste, and usually expresses a strong desire for fresh vegetable food and acids. The urine is turbid and dark-coloured; the vision becomes more or less impaired; and the muscular powers so prostrated that the patient can scarcely maintain the erect position. The blood is thick, dissolved, and very dark; the pulse weak and soft. As the disease advances, stiffness of the joints and indurations in the muscles occur, accompanied with severe pains in the thighs, back, and loins, particularly in the knees; and the patient, at times,

* Richter Specielle Therapie. Bd. p. 795.

experiences violent spasmodic or flatulent pains in the bowels, attended with retraction of the umbilicus, and constipation. The respiration is constantly more or less oppressed; subcuticular extravasations of blood appear on the extremities, and occasionally on other parts of the body; and passive hæmorrhages occur from the gums, nose, rectum, bladder, &c., at the same time that ulcers are formed on the calves of the legs and thighs, exhibiting an œdematose and flabby appearance, with irregular and bloody edges, and discharging a red ichorous fluid. The gums separate from the teeth and slough, and the teeth become loose in their sockets and often drop out; old and cicatrized wounds reopen; the bones become brittle, and syncope occurs on slight corporeal exertions. If the disease continues unchecked in its progress, extreme prostration at last ensues; respiration becomes exceedingly anxious, fatiguing, and oppressed: syncope, even while the patient is at rest, or merely by turning himself in bed, occurs frequently; a cadaverous or fetid effluvium exhales from the body; emaciation goes on rapidly, and in some instances paralysis of one or more extremities ensues, or extensive dropsical effusions, jaundice, diarrhœa, or dysenteric discharges, and finally a rapidly exhausting irritative fever, or coma and convulsions, close the scene.

The duration of scurvy is, *in general*, protracted; but there nevertheless occurs a very considerable diversity in this respect. In violent instances of the disease, where its progress is favoured by previous habits of living, or, perhaps, by a peculiar constitutional predisposition, the disease sometimes acquires great severity in the course of a few weeks. This, however, is rarely the case with *land scurvy*—the most rapid and fatal instances usually occurring on board of ships while at sea. Land scurvy very rarely appears in the violent form described above. In many instances it continues for a long while, with no other symptoms than languor, a fetid breath, spongy and hæmorrhagic gums, and brownish spots on the legs, with slight œdema of the feet, and a pale and puffy countenance—the patient being all the while able to be up and about. Sometimes it shows itself chiefly by blotches of extravasated blood on the inferior extremities, and foul and bleeding ulcers on different parts of the body, with spongy and tender gums.

Post-mortem phenomena.—The different cavities of the body generally contain an abundance of serous fluid mixed, in many instances, with more or less blood. The mucous membrane and surface of the viscera commonly exhibit dark and apparently gangrenous spots; and blood is found extravasated in different parts of the cellular tissue, under the membranes, and sometimes into the alimentary canal, the lungs, and even into the abdomen. The heart is flaccid and pale; the spleen soft,

and turgid with dissolved blood; the muscles livid, and often so soft that they may be easily broken down between the fingers. The bones are usually very brittle, or preternaturally soft—particularly the epiphyses, which may sometimes be separated from the bones with great ease. The blood is universally found in a dissolved state, and very black.

Causes.—Persons of a debilitated and phlegmatic habit of body, with a disposition to obesity, are said to be most subject to this disease. The *exciting causes* are: the habitual use of innutritious, unwholesome, or an exclusive *salt animal*, or *vegetable* diet, more especially when conjoined with much fatiguing labour, and exposure to a *damp and impure* atmosphere. Anxiety of mind, with a sedentary mode of life; and the habitual intemperate use of spirituous liquors, contribute also very considerably to the production of scurvy. Damp and impure air, however, in conjunction with a vitiated, or exclusive salt animal diet, is by far the most common source of this malady, whether it originate on land or on sea.

In relation to the essential nature or proximate cause of scurvy, pathologists have expressed a variety of opinions. That the blood exhibits a morbid condition, is unquestionable; but whether this state of the humours is primary or secondary, in reference to the occurrence of the disease, has been a subject of much controversy. Lind, Milman, Sprengel, and Dreyssig, contend that scurvy consists essentially in a weakened and relaxed state of the *solids*, of which the changes which occur in the blood are mere consequences. On the other hand, Hoffman, Trotter, Jackson, Cullen, and some later writers, consider a putrescent or morbid state of the blood, as the primary and essential condition upon which the debility and relaxation of the solids, and the other characteristic phenomena of scorbutic affections, more or less directly depend. From a view of the nature of the most common and powerful remote causes of this disease—namely unwholesome, innutritious, and especially an exclusive salt animal diet, the idea of its dependance on a deranged or vitiated state of the blood appears very plausible; and the more so, as we know that the chyle, and we may presume the blood also, are manifestly modified, according to the nature of the aliment used. The circumstance too, that a scurvy which occurs while the individual is confined to a particular kind of diet, almost invariably soon begins to disappear when the aliment is changed, argues directly and strongly in favour of its humoral origin. It is nevertheless most probable, that the fundamental affection consists in a deranged condition of the chylopoietic functions, and of the process of sanguification; for it can scarcely be admitted, that any considerable change could occur in the composition of the blood, without a previous derangement of the functions that are more immediately

concerned in the elaboration of this fluid. That the morbid condition of the blood, resulting from a disordered action of the functions just named, has a direct, and perhaps a principal share in the production and support of the characteristic phenomena of the disease, cannot, I think, be doubted; for an intimate depravation of the general mass of the blood, from whatever cause it may arise, must, one may suppose, necessarily give rise to a universal morbid condition of the organization—more especially to the reproductive or *vegetative* functions of the system.

Prognosis.—In general, the prognosis in scurvy is not very unfavourable; and in the ordinary cases of the disease, manifestly the result of some peculiar and exclusive aliment, it very rarely resists an appropriate change of regimen. Indeed, it is surprising how rapidly even very aggravated instances contracted at sea, will often disappear as soon as the patient is put on shore, or is allowed a fresh vegetable and acescent diet. In severe cases, however, the influence of the *land air* is occasionally, though indeed very rarely, manifestly injurious, and greatly hastens the progress of the malady. (Richter.) After the disease has continued until symptoms of extreme prostration and universal depravation of the solids and fluids are induced, such as great difficulty of respiration, frequent syncope, and slouging of the gums, with extensive œdema, or dropsical effusions, there is, indeed, but little advantage to be expected from any mode of management. When the disease occurs in persons of a gouty habit of body, or is complicated with syphilis, the prognosis is always to be regarded as unfavourable; and a broken down constitution, by the frequent use of mercury, is also particularly calculated to enhance the obstinacy and dangerous consequences of the malady.

Treatment.—The first and most important part of the remedial management of scurvy is the removal of the causes which produced the disease. When it is the result of impure diet, and a vitiated and damp air, more wholesome food and a purer atmosphere are indispensable. The scurvy which occurs at sea, is almost universally the consequence of the exclusive and long continued use of *salt* animal food, and of bad and impure water; and hence cases of this kind almost always disappear very speedily as soon as the patient is put upon the use of *fresh* vegetable and animal food, and vegetable acid drinks—such as *lemon juice* and good vinegar. The employment of acids of this kind, particularly the lemon juice, is one of the most effectual means for preventing or arresting the progress of this affection when it arises from the use of old and salted meats. It appears, however, that vegetable acids are not so universally beneficial in this affection as has been supposed. An interesting account of the total failure of lemon

juice in arresting the progress of scurvy on board of the British ship Leander, is given in the Med. Chir. Rev. for June, 1824.* After this acid had been fully tried, without the least benefit, the disease was quickly vanquished by the free use of *fresh animal* food, in conjunction with vegetables. Dr. Bampfield, also, in his work on tropical dysentery, speaks of the great benefit which may sometimes be derived from *fresh* animal food, in sea scurvy. In general, however, a *mixed diet*, composed of fresh animal and vegetable articles of food, is the most salutary in scurvy arising from the exclusive use of old and salted meats, or of unwholesome, coarse, and oily aliment. There are certain vegetables, however, which experience has shown to be especially beneficial in this affection; and they should undoubtedly be used whenever they can be had. The principal of these are: horse-radish, scurvy-grass, garden-cresses, water-cresses, garlic, onions, the fruit of cloud-berries, lettuce, celery, endive, spinage, carrots, cabbage, oranges, mustard, and all kinds of acid fruits. Of all these vegetable substances, however, cabbage in the form of *sour-krout* is decidedly the most valuable, both as a preventive and curative means. Fermented liquors, buttermilk, fresh milk, vinegar and water, but especially water acidulated with lime juice and a decoction of malt, taken freely as common drink, are highly proper beverages in scorbutic affections.

Medicinal articles are seldom of very material service in the treatment of scurvy; and without the proper changes in diet already mentioned, they are always wholly ineffectual, and may even prove injurious under the most careful management. Mr. Patterson, however, speaks very favourably of the effects

* "In the year 1822, His Majesty's ship Leander sailed from Trincomalee for the Cape of Good Hope, taking on board the mechanics of the dock yard establishment then reduced on the island. There were also embarked twenty-six invalids, and all the sick that could be removed from the hospital. These invalids and sick were principally affected with chronic hepatitis, dysentery, and phthisis pulmonalis, all of which (even some who were expectorating large quantities of purulent matter) recovered on the passage to the Cape. This good fortune was counterbalanced by scurvy, which broke out among the crew, and, in spite of large quantities of lemon juice plentifully administered in conjunction with every other antiscorbutic which the ship could produce, spread to an alarming extent, and in one case proved fatal. Had they not reached the Cape at the time they did, the Leander would have presented as deplorable a spectacle as the Anson, at Juan Fernandez, notwithstanding the supposed specific *lemon juice*, which in no instance on board the Leander had the slightest effect in even checking the ravages of scurvy. Immediately the ship reached the Cape, and the crew got plenty of fresh *animal* food, in conjunction with vegetables, they rapidly recovered. Specimens of the lemon juice were transmitted to the Victualing Board, and carefully analyzed in London. It was found perfectly good."

of a solution of nitre in vinegar, in the proportion of four ounces of the former to a quart of the latter—given in doses of from half an ounce to two ounces twice or thrice daily. During the stage of convalescence some advantage may be derived from tonics, particularly iron, cinchona, calamus aromaticus, cort. aurantior., cort. winteranus, cascarilla, and the *mineral acids*. Richter mentions the following infusion as often very useful in the treatment of land-scurvy.* An infusion of calamus and Peruvian bark, with the addition of elixir vitriol, is particularly praised by Jahn. Kotrum asserts that he has derived considerable advantage from the use of *savin* in this affection; and the bark of the *betulæ albæ* is said to have been very beneficially employed in this affection. As a local application to scorbutic ulcers, whether situated in the mouth or elsewhere, a strong solution of the muriate of lime will in general answer a very good purpose. Water acidulated with muriatic acid and sweetened with honey, forms an excellent lotion for the gums. A weak solution of the sulphate of copper, or of lunar caustic, may also be beneficially employed for this purpose.

CHAPTER XXXII.

GONORRHŒA.

A RUNNING or discharge of purulent matter from the urethra, is noticed as a loathsome affection "by successive authors, from the earliest periods in which we have any medical records;" but it was not considered as having any essential connexion with syphilis until upwards of half a century after the introduction of this latter disease into Europe. Since that period, the relation subsisting between these two affections has been a subject of much controversy; but the general opinion at present is, that they are radically distinct—each depending on its own specific virus, although many eminent physicians still contend for their identity. The experiments of John Hunter, which appeared to prove that gonorrhœal matter is capable of forming chancre, and, on the contrary, that matter taken from

* R. Rasur. raphan. rustic. ℥iii.
Ferri. pulverat. ʒi.
P. rad. rhæi ℥ss.
Rad. zingiberis ʒii.
Vin. alb. generos. lb. ii.—M. Stent in infus. per xii. horas, cola. Take a tea-cupful three times daily.

a chancre, when brought in contact with the urethra, will form gonorrhœa, have been contradicted by various experimenters—more especially by Mr. Benjamin Bell; and the very frequent occurrence of gonorrhœa, where of course the virus is largely and constantly applied to the glans penis, without the appearance of chancre, is strongly opposed to the opinion of their specific identity. It must, indeed, be admitted that chancre and gonorrhœa frequently appear together; but where this is the case, there can exist but little doubt that the two poisons were communicated either at the same impure venereal intercourse, or at distinct connexions. I have lately seen an instance illustrative of this fact. The patient laboured under gonorrhœa of about six weeks' standing: before it was cured he had connexion with a woman; and in six days afterwards a genuine excavated syphilitic chancre made its appearance.

Gonorrhœa generally comes on in three or four days after an impure connexion; but in some instances it appears within the first forty-eight hours, and occasionally not until the expiration of eight or ten days after the application of the virus. At first, a disagreeable itching or prickling sensation is felt in the point of the urethra, passing a short distance up from the orifice, which on examination will be found slightly reddened and somewhat tender. After this sensation has continued for ten or twelve hours, the mouth of the urethra becomes sensibly inflamed and swollen, and a limpid or yellowish matter begins to ooze from it. The stinging and itching now increase, and the emission of urine occasions a severe smarting and burning pain in the anterior portion of the urethra. The pain now extends more or less speedily inwards along the urethra; the glans penis becomes swollen, dark red, and tender to the touch, and the discharge acquires a yellow-greenish colour, resembling diluted pus. Frequent and very painful erections harass the patient—more especially after he has been some time in bed; and on passing water the pain, in some instances, is exceedingly smarting. In many cases the inflammation extends from the mucous membrane of the urethra to the corpus spongiosum, giving rise to much tenderness and hardness of this part, and particularly to a most painful affection called *chordee*, which consists in strong and protracted erections, whilst, from the inflamed and unyielding state of the corpus spongiosum, the penis is thrown into a curved form, with the frenum drawn down and the body forced upwards. At this stage small portions of blood are often mixed with the gonorrhœal discharge; and the prepuce sometimes becomes much inflamed, tumid, and slightly excoriated at the edges and in spots on its internal surface.

In some instances one or more of the inguinal glands become inflamed and swollen, and a knotted cord of inflamed lymphatic

vessels is felt along the dorsum of the penis. Many patients experience a constant aching pain in the glans and body of the penis; and occasionally one or both testicles become tender, inflamed, and much swollen, attended with pain along the whole course of the spermatic cord. Considerable symptomatic fever always attends, when the inflammation becomes thus extended from the urethra to the neighbouring structures. Not unfrequently the whole tract of the urethra becomes inflamed, giving rise to harassing sensations of burning and titilation in the neck of the bladder and anus, and very severe cutting pains in the perineum on making water. The patient, under these circumstances, feels a continual urgency to make water, but from the great tenderness of the neck of the bladder and urethra, only a few scalding drops are voided at a time. When the testicles become inflamed, the gonorrhœal discharge is always sensibly diminished, and in many cases entirely suppressed. Sometimes some of the engorged capillaries of the mucous membrane burst, and more or less of pure blood passes off. After an uncertain period these inflammatory symptoms begin to subside. The scalding pain in making water gradually ceases; the erections become less frequent and painful; and the gonorrhœal matter acquires a greater consistence, and becomes white and ropy.

The specific inflammation of gonorrhœa, is primarily seated in the mucous membrane of the urethra, a short distance above its orifice in the *fossa navacularis*, and chiefly affects the *lacunæ mucosæ* of Morgagni, and their excretory ducts. From this point, however, it often extends higher up the urethra to the membranous portion, the veru montanum, and neck of the bladder.

Sometimes the gonorrhœal matter, in the first instance, does not penetrate the urethra, during impure venereal connexion; but being applied to the glans penis, it gives rise to irritation and a discharge of thin purulent matter from the sebaceous glands situated around the corona glandis. Much more commonly, however, the matter discharged from the urethra comes in contact with the internal surface of the prepuce and the glans, and causes excoriations of these parts, from which a thin whitish or whey like fluid is discharged. These excoriations usually appear in the form of irregular patches, leaving interstices of sound skin between them. It would seem too that the virus of gonorrhœa when brought to act on the glans and internal aspect of the prepuce, often produces a peculiar variety of venereal ulcer of a mild character, exhibiting a smooth surface, slightly raised above the surrounding skin, having a healthy colour, but without granulations, and exhibiting somewhat of a fungous appearance. (Carmichael.) These ulcerations are generally connected with more or less phymosis. In some

instances, gonorrhœal discharge from the urethra is accompanied both by excoriations and ulcers of the kind just mentioned; but more frequently the disease is attended with simple excoriations of the prepuce and glans. Gonorrhœa is, in some rare instances, succeeded by constitutional symptoms—and this is most apt to be the case in those instances of the disease that are attended with the primary excoriations or ulcers just mentioned. These constitutional symptoms consist in minute papular eruptions, varying from a pale red to a deep crimson colour, which are ushered in by pyrexia and redness, pain and swelling of the joints. These papulæ do not come out together, but follow each other in succession. Some of them are simply pimples, while others are almost advanced to the pustular form. These are most numerous, and in some instances almost altogether confined to the parts about the shoulders, arms, and back. The febrile symptoms are transient, and the papular affection usually disappears without difficulty under the use of purgatives, a simple and unirritating diet, antimonials, and an equable and dry air.

In women, gonorrhœa is very rarely attended with the painful symptoms that accompany the disease in men. Indeed, in many instances there is so little uneasiness and pain experienced by females from this disease, that the discharge is often regarded as simple fluor albus. It is very remarkable, that gonorrhœal inflammation in females is exceedingly seldom, if ever extended to the urethra. Swediaur asserts, that he has "never seen a woman in whom the disease was seated in the urethra." The orifice of this canal, however, is generally more or less irritated, and in some instances it becomes so very sensible, that the urine in passing off gives rise to extremely severe pains. The seat of the disease is usually either in the clitoris, round the orifice of the urethra, and on the nymphæ in the cavity of the vagina, or at the inferior commissure of the labia and rapha. (Swediaur.)

Women affected with gonorrhœa, generally experience a disagreeable itching and titilation about the orifice of the vagina, and at the rapha. In severe cases, the labia, nymphæ, and clitoris become swollen and extremely tender; and there is generally a severe burning and stinging pain felt in voiding the urine. In violent instances of the disease, there is a constant aching pain experienced in the bladder, womb, groins, and back; and the upper and inner surface of the thighs often becomes inflamed, excoriated, or covered with an inflamed pustular eruption, from the irritation occasioned by the gonorrhœal discharge.

In general, the mucous surface from which the gonorrhœal matter proceeds, is entirely free from ulceration or excoriation. But this does not appear to be always the case, as is usually

asserted by writers; for, according to the observations of Whately, irregular patches of excoriation, similar to those which appear on the prepuce and glans, sometimes occur on the lining membrane of the urethra. It must be observed, however, that excoriations or ulcers of the mucous membrane of the urethra in this affection are altogether accidental, and by no means essential conditions of the disease.

Treatment.—Gonorrhœa appears to have a natural tendency, if left to itself, to terminate spontaneously. At first, as has already been stated, the matter is thin, and communicates a greenish stain to the linen; but as the inflammation gradually subsides, the discharge becomes thicker, cream-like, and less abundant; and if the general habit is not phlogistic or irritable, and the patient avoids the influence of stimulating causes, the secretion of the gonorrhœal fluid often gradually diminishes, until in the course of six or eight weeks it ceases entirely.

There are few individuals, however, who are willing to delay the use of remedial measures, or who are sufficiently prudent to abstain from stimulating ingesta and other causes calculated to keep up the phlogistic habit of the system, to obtain such a favourable result; and in most instances, either from injudicious attempts to arrest the discharge, or from a general inflammatory and irritable diathesis, favoured by stimulating diet and drink, the disease, if it is not subdued by an appropriate treatment, degenerates into a chronic urethral discharge, consisting of a milky fluid, usually called *gleet*.

During the inflammatory stage of the complaint, it should be treated strictly as a local inflammatory affection, without any regard to the peculiar nature of the inflammation, or the muco-purulent discharge which attends. In plethoric habits, and particularly where the pulse is hard and active, blood should be freely drawn; and the inflammatory state of the system must be reduced by the use of internal antiphlogistic remedies. For this purpose, the saline purgatives, nitre, and tartarized antimony, are decidedly the most useful remedies we possess. Dr. Carmichael is particularly partial to the use of the *tartarized antimony*, dissolved in a solution of *sulphate of magnesia*; and when given so as to keep up a slight degree of nausea, and to procure four or five alvine evacuations during the day, this combination is in fact a highly efficient remedy during the inflammatory period of this complaint.* Nitre and antimony dissolved in a large proportion of some mucilaginous fluid, as a solution of gum arabic, barley-water,

* R. Sulphat. magnesiæ ℥ii.
Tart antimonii gr. ii. M. Take a table-spoonful every two or three hours.

or flaxseed-tea, will in general prove very serviceable, both as a means of lessening the scalding of the urine, and the general and local inflammatory action.* In conjunction with these remedies, the patient should drink freely of some bland, mucilaginous fluid. For the relief of the painful erections and chordee, which usually harass the patient—particularly at night in bed, cold applications may be tried; but although occasionally beneficial, they much more frequently procure but very little relief. Indeed, *warm* fomentations, or emollient cataplasms, are more frequently servicable in this respect, than cold applications to the part. *Opium*, given in full doses, is in general a very useful remedy for this purpose; and its good effects are often considerably enhanced by giving it in union with camphor. From one to two grains of the former, to eight or ten grains of camphor, taken an hour before going to bed, will generally prevent the occurrence of the painful affections during the night. Mr. B. Bell strongly recommends the use of *camphor* and *hyoscyamus* as a means for alleviating the sufferings occasioned by chordee. These articles, he says, should be given in large doses. In general, half a drachm of the former, with a scruple of the latter, given in the course of twenty-four hours, will be found sufficient to allay this affection; but in some instances, he gave it to twice this extent in the same period of time.† If bleeding takes place from the urethra, it ought not to be arrested unless, it becomes too copious, which very rarely happens. When it is desired to stop the hæmorrhage, pressure made upon the urethra with the hand for twenty or twenty-five minutes, will almost always be sufficient to arrest it. Rest, and a mild and unirritating diet, always contribute very materially to the reduction of the inflammatory symptoms. Much advantage may also, in general, be obtained from the application of warm fomentations to the penis, during the inflammatory stage of the complaint.

Nothing is more common than the employment of astringent injections, almost as soon as the disease commences; and although the discharge may sometimes be speedily arrested in this way, yet, the consequences are often extremely injurious. "This practice," says Mr. Carmichael, "is attended with such risk of exciting inflammation of the entire urethra and bladder, and all the immediate, as well as the secondary train of evils attendant upon this calamity, that I have no

* R. G. arab. ℥iss.
Nitrat. potassæ ℥i.
Tart. antimonii gr. i.
Infus. sem. lini. ℥xvi. Of this a wine-glassful may be taken every hour.

† Edinb. Med. Journal of Medical Science, No. I. January, 1826.

hesitation in saying, that it is a practice that cannot be too strongly deprecated."

As soon as the general and local inflammatory symptoms have been in some degree reduced, and the discharge becomes thick and more purulent, balsam copaiva, cubebs, or what are called terebinthinate remedies, must be resorted to. Almost all writers agree in giving a preference to the *balsam copaiva* as a remedy in this affection; and when given in large doses, it will, in fact, more frequently put a stop to the disease than any other article we possess. To obtain the full advantages which it is capable of affording, it should be given in as large doses as the stomach will bear. The following is an excellent formula for administering this article:*

The balsam copaiva may be safely and beneficially administered in this affection where the general habit is not very irritable or phlogistic, although the local inflammation may still remain in an active state. I have often given this article in the beginning of the disease, as soon as the bowels were freely evacuated by a saline cathartic, with complete success.

Indeed, many eminent practitioners do not hesitate to administer it in large doses soon after the commencement of the disease, and where the inflammation is not particularly violent, and the general arterial system does not sympathize with the local affection, it may be employed with advantage. Dr. Johnson observes that, according to his experience, this article "may be safely administered in drachm doses, during the inflammatory state of the disease, and with palpable success. Under such a treatment incipient gonorrhœa has ceased in two or three days."

Cubebs, also, are an excellent remedy in gonorrhœa. They are, however, much more stimulating than the preceding article, and must be given with more caution during the inflammatory stage of the disease. Mr. Jefferies states, that the good effects of cubebs, where it is servicable, usually begins to manifest its beneficial influence within forty-eight hours after the first dose; and where no material relief is obtained in the course of five or six days, its further use will rarely be attended with advantage.† This remedy appears to be most apt to prove serviceable in relaxed and leuco-phlegmatic habits; and in order to derive the full advantage which it is capable of affording, it should be given in large doses. From six to

* R. Bals. copaiv. ℥i.
Spir. nit. dulc. ℥ss.
Tinct. opii
Spirit. camphoræ āā ʒi. M. Of this a tea-spoonful should be taken four times daily.

† Practical Observations on the Use of Cubebs in the Cure of Gonorrhœa, p. 18.

eight drachms of the powdered cubebs may be given in the course of twenty-four hours, where the inflammatory action of the affected parts has been in a great degree reduced. The tincture, also, is an excellent mode of administering the cubebs. I usually direct a large tea-spoonful of it every four hours. Much more commonly, however, I have given it in combination with balsam copaiva, according to the following formula.*

In cases entirely free from general irritation and inclining to a chronic character, I have often united the balsam copaiva, cubebs, and spirits of turpentine with peculiar advantage; and in *gleet*, I know of no remedy which so frequently succeeds in making a decidedly favourable impression on the disease, as the tincture of cubebs in union with the spirits of turpentine, in the proportion of two parts of the former to one of the latter, given in tea-spoonful doses three or four times daily.

It is proper to observe, that the use of medicines of this kind ought always to be continued four or five days after the discharge has been arrested by them; for when they are discontinued as soon as the running ceases, it very frequently returns in the course of five or six days; and when this happens, we rarely find the medicine to produce the same beneficial effect as it did in the first instance. Many of the obstinate cases I have met with, were relapses of this kind after the discharge had been suspended by the use of terebinthinate remedies.

When, notwithstanding the free employment of medicines of this kind the discharge continues, recourse should be had to astringent injections. Under judicious management, and after the inflammatory stage has passed off, local astringent applications may be used without the least risk of injury, and very generally with speedy success. A great variety of articles have been recommended for this purpose; but in general the *sulphate of zinc* will prove more promptly beneficial than any other astringent remedy we possess. The injections should at first be weak—not above a grain and a half of this article to an ounce of water—but in proportion as the disease assumes a chronic character, the quantity of the zinc should be increased to eight and even ten grains to the ounce. It is a very common practice to unite the sulphate of zinc and acetate of lead

* R. Bals. copaiv.
Tinct. cubebæ āā ℥i.
Spir. nit. dulc. ℥ss.
Tinct. opii ℥i.
Sacch. alb. ℥i.
P. g. arab. ℥i.
Aq. fontanæ ℥viii.
M. Take a table-spoonful three or four times daily.

in injections for this complaint; but it has never appeared to me that any peculiar advantages are to be derived from such a combination. It must, nevertheless, be observed, that there occurs much diversity in different cases with regard to the utility of different astringent injections. We sometimes find a variety of injections wholly ineffectual in this complaint, when at last some particular combination or article will speedily put a stop to the discharge. This, no doubt, generally depends on the peculiar grade of the irritation in the mucous membrane of the urethra. In the atonic stage of the disease, I have often employed the diluted sulphuric acid with complete success, after the zinc and other articles of a similar character had failed to arrest the disease. A drop, or a drop and a half of the *oil of vitriol* to an ounce of water, forms an injection of the proper strength. The sulphate of copper, too, may be advantageously used for this purpose. Two grains of this article to an ounce of water form an injection of the medium strength; but it will in general be better to commence with a grain to the ounce, and afterwards increase it to three or four grains, according as the disease assumes a chronic character. In some instances the nitrate of silver, in the proportion of two grains to an ounce of water, will succeed very speedily; and in gleet or atonic gonorrhœa, the proportion of the silver may be increased to three or four grains to the ounce. I have in a few instances of very obstinate gonorrhœa, succeeded with an injection prepared from the balsam copaiva in the following manner. Two drachms of the balsam are to be triturated in a mortar with a drachm of *carbonate* of magnesia. After they have been rubbed together, eight ounces of warm water must be added, and well mixed with the magnesia and balsam. It must then be suffered to stand until the water becomes clear, when it must be poured off, and used as an injection. Mr. Foot, in a work on the venereal disease, published in London about ten years ago, strongly recommends the following solution as an injection in gonorrhœa, after the inflammation has subsided. Dissolve some sulphate of copper in a sufficient quantity of water; precipitate the solution with lixivium of tartar; suffer it to separate, then pour off the clear liquor. Wash the precipitate until the water becomes insipid; then make a saturated solution of carbonate of ammonia in water, and mix as much of the precipitate with the filtered solution of the ammonia as it will dissolve, which reserve for use. Six drops of this ammoniated copper to an ounce of water form an injection of the proper strength. Six or eight years ago I used this injection in various instances, and generally with benefit.

In obstinate cases of *gleet*, the long continued use of the tincture of cantharides in conjunction with astringent injections, particularly a solution of the nitrate of silver, will sometimes

succeed better than any other remedy. The cantharides should be given in gradually increasing doses—commencing with about thirty drops three times daily, until symptoms of strangury ensue, when it must be discontinued, and resumed after the *ardor urinæ* has disappeared. I have often succeeded with the internal use of the spirits of turpentine, in conjunction with injections; but this article is much more offensive to the stomach than the cantharides, and patients will seldom continue it a sufficient length of time to obtain the full advantages which it is capable of affording. The direct application of astringent and exciting applications by means of a bougie, will sometimes succeed after all other remedies have failed. I have in several instances removed the disease by introducing a bougie, upon which some citrine ointment was smeared; and in one very obstinate and protracted case, I lately succeeded in effecting a cure, by applying in this manner the lunar caustic rubbed up with lard. Twenty grains of the caustic may be triturated with half an ounce of lard, as an application for this purpose. A gleety discharge is, however, very frequently dependant on the irritation of stricture of the urethra; and when this is the case, nothing but the removal of the stricture by the judicious employment of bougies will effect a cure. Whenever a thin milky discharge continues obstinately after the use of the foregoing means, we may suspect the existence of stricture; and on being consulted for aid in a long-standing case of this kind, it is always proper, before any remedial measures are adopted, to make the proper examination, in order to ascertain the state of the urethra in this respect.

It may be proper again to say, that where there is much irritability or active inflammation of the urethra present, all astringent or irritating injections are highly improper. When used under circumstances of this kind, they are apt to give rise to various distressing affections—particularly to obstinate chordee, inflammation of the body of the penis, of the neck of the bladder, and of the testes, and to strictures in the urethra. In relation to the formation of strictures, however, Mr. Carmichael makes the following observations, which are entirely accordant with my own views. "Strictures," he says, "are more generally attributed to the use of injections than any other attendant of gonorrhœa; but I have so often witnessed their occurrence where injections have never been used, that I am more inclined to ascribe these affections to the irritation of gonorrhœa than to any other cause. The sooner such irritation is removed, the more likely is the patient to avoid those unpleasant visitations which are far more to be dreaded than the original disease. I have, therefore, no hesitation in putting as speedy a stop to the discharge as I can, by the use of astringent injections, if the internal remedies mentioned disappoint my expectations."

The observations made above, in relation to the propriety of continuing the internal terebinthinate remedies for several days after the disappearance of the gonorrhœal discharge, are entirely applicable also to the employment of injections. In using injections, it will be proper to prevent the passage of the fluid into the neck of the bladder, which may be readily done by making pressure over the posterior part of the urethra near the margin of the anus.

SYPHILIS.

The origin of syphilitic diseases is still involved in much obscurity. The general opinion of its having been introduced into Europe from South America by the sailors who accompanied Columbus, admits of a great deal of doubt. Dr. Thomson, who has investigated this subject with much learning and discrimination, observes, that it "is extremely improbable that *sailors*, after a long and successful voyage, landing on the northern coast of Spain, objects of curiosity, ready to embark again to reap the fruits of their discoveries, and the wealth the new countries were supposed to abound with, should have been sent off to act as *soldiers* at the siege of Naples, labouring under a new and horrid disease, which must have been of some months' duration, and have incapacitated them for every kind of exertion. That neither Columbus himself, nor his brother, who left such accurate narratives of his voyage, should not make the least mention of such disease being discovered among the natives, or prevailing among the crews of their vessels, is certainly still more difficult to be reconciled with reason, and afford strong presumption of error."* He thinks it probable that the disease has existed more or less, and under different grades of severity, in all ages, and that "it has been thousands of times generated *de novo* by impure sexual intercourse." The circumstance which especially attracted the attention of physicians to the disease about the period of its supposed importation into Europe, was probably its having assumed at that time an extraordinary degree of violence; for it is very evident from the records of medicine, that the disease has varied very much since the first accounts that were given of its phenomena and character; and it is certainly very far from possessing the terrible severity now, which it manifested during a long period after it was first particularly noticed. It is not improbable, too, that the connexion between primary ulcers on the genitals, and what we now call the secondary con-

* Medico-Chirurg. Review, December, 1821, p. 617.

stitutional symptoms, were overlooked by the ancients; for as the former would very generally heal before the latter could make their appearance, and more especially as these constitutional affections were free from the power of infecting the healthy, they might very readily have been regarded as accidental diseases, wholly independent of primary sores on the organs of generation. Besides, although ulcers were abundantly noticed and described on these parts, their origin from impure venereal intercourse may have escaped detection. It is certain, at least, that Celsus describes various species of ulcers on the genitals; and it appears to me difficult to read his sections *De cancro qui in cole nascitur; De phagedena in cole nascente;* and *De carbunculo qui in cole nascitur*, without being impressed with the conviction, that he had reference to the various species of sores now known under the name of syphilitic chancre.

The opinion that syphilis is an ancient disease, but that it has been subject to various modifications from the influence of some occult cause in different ages, is strongly illustrated by the following account of a "new syphilitic disease which has lately appeared in Canada," in the last edition of Swedeaur's valuable work on this syphilis: "A new disease," says this writer, "broke out some time ago in Canada, especially in St. Paul's Bay. This disease has made rapid progress within these few years among the inhabitants of Canada. The parents transmit it to their children. It is communicated by eating, drinking, &c. If it once enters a family, rarely any one escapes catching it. Some habits seem to absorb the virus, and then sometimes it remains concealed or dormant for years, and then breaks out at last with all the symptoms of the third stage. The patients, often dragging out a miserable existence to old age, lose by degrees, eyes, nose, cheeks, velum pendulum, and the whole basis of the skull, &c. They call it *mal Anglois*, (the English disease) because they think the English brought it first amongst them." This accords with the violent and exceedingly contagious character which syphilis is said to have had during the first century of its ravages in Europe. It was communicated "by lying in the same bed, by the clothes, gloves, or money of the patient;" and even the breath was thought to be sufficient to communicate the disease; for it is stated that cardinal Wolsey was indicted "for whispering in the king's ear while supposed to be labouring under the venereal disease." (Thomson, loc. cit.) Finally, it must be observed that some of the earliest writers did not consider this affection in Europe as of transatlantic origin. Fracastorius ascribed it "to the different constitutions of heaven and stars, which but seldom happen, but may effect great matters when they do coincide;"* and he,

* Aphrodisiac, p. 202, as quoted by Van Sweiten.

as well as others, believed that it was one of those diseases which rise, cease, and again return at long intervals of ages.* But although inquiries into the origin of the disease are highly interesting, and not altogether useless, the immediate scope of this work does not admit of an extended discussion on this point, and I proceed, therefore, to the more practical details of the phenomena and modes of remedial management of this malady.

Syphilis, when suffered to proceed in its course, passes through two distinct stages or series of phenomena:—the first or *primary*, which is altogether local;—and the second, or *constitutional*, in which the system generally becomes implicated in the disease.

Primary ulcers, or chancres.—At an uncertain period, varying from a few days to several weeks after an impure venereal intercourse, one or more small pimples, excoriations or ulcers, preceded, usually, with an itching in the part, appear on some part of the genital organs, most commonly on the internal surface of the prepuce, the corona glandis, the glans, or on the frenum; and occasionally on the *external* surface of the prepuce, skin of the penis, scrotum or thighs in men; and in females, on the internal or external surface of the labia pudendi, on the clitoris, the nymphæ, in the vagina, or on the thighs.

Authors have of late years distinguished with great minuteness the primary venereal ulcers; and some have arranged them under distinct heads, ascribing to them specific differences, with the view, principally, of establishing certain indications in relation to the propriety of administering or withholding mercurial remedies for the prevention and cure of the secondary constitutional symptoms which may ensue. That there are divers local affections of this kind, is indeed unquestionable. The observations of Hunter, have long ago established this fact very conclusively; but it may be greatly doubted, whether the classifications and hair-splitting distinctions which have been announced as absolute and essential differences in the various ulcers of this kind, are entitled to our confidence, at least to the full extent to which they have been carried by some writers. Carmichael asserts, that there is but one of the four classes of the primary ulcers he describes; namely, the indurated and excavated chancre of Hunter, that is capable of giving rise to the true secondary symptoms of lues. This assertion, however, is by no means established on

* Quam tamen (æternum quoniam dilabitur ævum,)
Non semel in terris visam, sed sæpe fuisse,
Ducendam est: quanquam nobis nec nomine nota
Hactenus illa fuit: quoniam longæva vetustas
Cuncta situ involvens et res, et nomina delet:
Nec monumenta patrum seri videre nepotes.

incontrovertible observations; for it may be affirmed on the authority of competent testimony, that constitutional symptoms, differing in no material point from those which are regarded as truly syphilitic, may arise from various primary venereal pores, distinct from the excavated and indurated chancre. One thing at least is certain, that it is often extremely difficult, and sometimes impossible to determine from the appearances of the chancre, to which of the species, usually described, it may belong; for in their external characters they sometimes pass into each other so insensibly—and the varieties of appearance met with in practice are so multifarious, that it will often baffle all our attempts to form a satisfactory diagnosis on this point. Even the unquestionably syphilitic chancre, so accurately described by Hunter, is liable to be confounded with other venereal sores, from these latter occasionally assuming the appearance of the excavated and indolent chancre. Dr. Hennen, whose opportunities for carefully observing these affections were very extensive, confesses his inability to point out "any invariable characteristic symptoms, by which to discriminate the real nature of the primary sore." "It would," he observes, "be by no means difficult to show, that the high round edge, the scoped or excavated sore, the preceding pimple, the loss of substance, the hardened base and edge, whether circumscribed or diffused, and the tenaciously adhesive discharge of a very fetid odour, are all observable in certain states and varieties of sores unconnected with a venereal origin. The hardened edge and base, particularly, can be produced artificially, by the application of escharotics to the glans or penis of a sound person; and if any ulceration or warty excrescence previously exists on these parts, this effect is still more easily produced."* Indeed, when we take into consideration the variety of textures which compose the parts upon which these primary sores occur —the diversity which exists in individual constitutions, and the various influences which are continually modifying the general habit of the body, we can readily conceive that sores, even from the same virus, must be liable to very different aspects in different individuals.

In making these remarks, I would by no means wish to be understood as regarding all distinctions of this kind as unfounded or nugatory; but to attempt to classify these primary venereal sores as fixed and essential diversities, merely from their external characters, and to propose them as indications for the employment or rejection of particular remedies, appears to me obnoxious to very serious objections.†

* Principles of Military Surgery, &c. p. 517.

† "It is not," says Swediaur, "by the external characters alone, that we can discover the nature, and distinguish the different kinds of ulcers

In relation to the diversities which occur in the primary as well as the secondary venereal affections, it must, in the first place, be observed, that there are two distinct classes of these maladies, namely: 1, *genuine lues, or syphilis*, for the cure of which mercury is indispensable; and 2, venereal affections, often closely resembling, though differing essentially from the former, and which may *in general* be cured without mercury.

I. *The true syphilitic chancre* is thus described by Mr. Hunter—"The sore is somewhat of a circular form, excavated, without granulations, with matter adhering to the surface, and with a thickened edge and base. This hardness and thickening is very circumscribed; not diffusing itself gradually and imperceptibly into the surrounding parts, but terminating rather abruptly." When examined, by pressing the chancre between the fingers, it will be found that the whole excavated surface of the ulcer is surrounded by a hard or indurated basis. In some instances, a small indolent ulcer is seated as it were in an indurated knob on the glans; and occasionally indurated tubercles passing deep beneath the surface, with scarcely any visible ulceration, will be followed by constitutional symptoms of syphilis—but in cases of this kind "we will probably learn, a small ulcer existed at first on the callous part, which healed under the use of some local application." (Carmichael.) When the syphilitic chancre is situated on the body of the penis, it presents a dark livid colour, without being scooped out or excavated, and the surrounding parts are less indurated than when it occurs on the glans penis. True syphilitic chancre is always of an indolent character—very slow in its progress. The excavated and circumscribed state of the ulcer, its indurated edges and base, and its slow progress, constitute the characteristic marks of the syphilitic chancre; but it must not be forgotten, that almost any sore situated on the glans penis is apt to acquire a more or less indurated condition from being frequently irritated by improper applications; and hence, "in forming a diagnosis, we should always take into consideration the previous management of the ulcer." (Carmichael.)

The constitutional symptoms which proceed from the true syphilitic chancre appear first upon the skin, the throat and mouth; and finally upon the periosteum, bones, and deep-seated parts. The true syphilitic eruption appears in distinct circular patches, from a few lines to half an inch in diameter. They are slightly raised and covered with thin, whitish, hard scales, easily separated, leaving smooth, shining, *copper-coloured* spots somewhat elevated above the surrounding skin. In some in-

alluded to; to inspection and practical knowledge, we must join a profound acquaintance with the diseases, an attentive examination into the actual state of the patient, his constitution, and the remedies and regimen which he has adopted."

stances a small white band encircles the base of each disk; and occasionally several of the spots unite, forming large irregular copper-coloured patches, with portions of scales adhering to them. These scaly copper-coloured spots are sometimes in a great measure confined to the forehead, neck, breast, forearms, legs, and anterior part of the abdomen. Syphilitic eruptions occasionally appear in the palms of the hands and soles of the feet, presenting a very peculiar aspect—namely; masses of dry friable scales, very easily removed, and exposing spots of a livid colour, with an indurated state of the skin and subjacent structure.

When the syphilitic patches are situated on parts opposed by another skin—as between the nates, under the arms, between the thighs and scrotum, &c., they do not present a dry and scaly appearance; but an elevated, soft, moist, and flat surface, discharging a thin whitish matter. Sometimes the upper part of the extremities of the fingers and toes become affected, and the nails are gradually separated.

If the disease is not opposed by the employment of mercury, "every succeeding scurf which is formed becomes thicker than the preceding, till at length it forms a crust, under which matter collects, and it becomes a true ulcer. These ulcerations spread very slowly.

After the eruption has made more or less progress, *the throat also becomes ulcerated*, generally about the tonsils and soft palate. These ulcerations are not preceded by much inflammation or swelling, and the tonsils exhibit ulcerated cavities with well defined edges, similar to the primary syphilitic ulcers on the glans penis. As the disease proceeds, the *periosteum*, the *fasciæ*, *ligaments*, and *bones* become affected; and of the bones, those nearest the surface, as the cranium, clavicle, and sternum, are most liable to become the seat of its destructive ravages. "The true syphilitic *node* is a solid enlargement of the bone," unaccompanied during the earlier periods of its progress by any discolouration of the skin, nor is there much pain, until it has arrived at a considerably advanced state.

II. Of the non-syphilitic venereal sores, and in which mercurial remedies are in general unnecessary and often highly injurious, the following are the principal varieties:—

1. *Venerola vulgaris**—or the *simple primary venereal ulcer* of Carmichael. This is by far the most common variety of venereal ulcerations. The simple venereal ulcer commences from three to seven or eight days after the impure sexual connexion, by an itching or redness, which is speedily succeeded by a small pustule surrounded with a red margin. In a few

* Pathological and Practical Remarks on Ulcerations of the Genital Organs. By James Evans, Surgeon, &c. &c.

days the pustule becomes converted into a thin crust, under which more or less matter collects and gives rise to considerable pain. The scab gradually enlarges and acquires a triangular or circular shape, varying in colour from yellow to dark brown. This scab soon separates, and exposes an excavated, round, or oval ulcer, with a glossy reddish or dirty yellow colour, surrounded by a narrow red areola. The bottom of the sore now begins to fill up; it rises above the level of the surrounding parts, and exhibits a smooth surface, seated on a fungoid basis, without granulations, and of the colour of a healthy sore, the base and edge being usually darker red than the disk of the sore. Between the fourteenth and fifteenth day, the ulcer generally has risen to its greatest height; but the process of ulceration, as well as the surrounding efflorescence, generally cease as soon as the fungoid stage commences. In some instances, the top of the elevated sore extends beyond its base over the surrounding sound skin, giving it the appearance as if a ligature were tied about it beneath the surface. In this state the sore remains stationary for some time, and then gradually and usually slowly declines and heals, the average period from the commencement to the termination of the ulcer occupying from four to six weeks. "Wherever may be the seat of these ulcers, on the inner part of the prepuce, their characters are seldom doubtful after the ninth day; for by drawing the skin well back and making allowance for the form of the parts, the raised edge and surface cannot escape discovery, for although these may not be plainly discernible all around, they will be so on some one side." (Evans.) These ulcers are particularly apt to excite phymosis, and are frequently accompanied with patchy excoriations on the glans and prepuce, and occasionally with a profuse gonorrhœal discharge.

The causes of *venerola vulgaris* consist of gonorrhœal matter and of other morbid vaginal secretions communicated by the sexual intercourse. With this variety of venereal ulcerations, we may place the "*patchy excoriations*" already mentioned, for they proceed from the same cause, and may exist either conjointly or separately.

Secondary, or constitutional symptoms sometimes succeed or attend this variety of primary venereal ulcers; but these are always mild, and readily disappear under mild aperient and diaphoretic treatment. These symptoms consist in slight febrile excitement, attended with headach, and aching pains in the joints, and occasionally also in the chest, succeeded by a *papular eruption* on the forehead, chest, and back, and scattered more thinly over the extremities. Fresh crops of these papulæ appear, at the same time that the slight febrile irritation, and nocturnal pains in some of the joints continue. "The papulæ vary from a pale-red to a deep crimson colour," some

of them preserving the character of pimples, whilst others are more of a pustular form. They may appear from five weeks to three or four months after the infection. When they are about declining they become paler, and often assume a copper tint, "while the exfoliation of the cuticle gives them an appearance of scaliness"—a state in which they may be confounded with the scaly eruption of true syphilis. "But they may be readily distinguished from each other; for when the papular eruption is on the decline, and has assumed a pale-red or copper colour, on examining the patient we shall find other spots in their papular or pustular form, which will at once point out the character of the eruption." (Carmichael.)

The fauces generally become affected, but not with excavated or spreading ulcers. The patient complains of soreness on swallowing, and on looking into the fauces, the entire cavity exhibits a red and œdematous appearance, with swollen tonsils.

2. *Venerola superficialis* of Mr. Evans, *or the primary ulcer of the pustular syphilitic eruptions* of Carmichael.—This variety begins with a small pustule, which soon breaks, and forms a crust, under which the cuticle ulcerates in a circular or oval form. When the crust separates, it exposes an ulcer of a reddish-brown surface, on a level with, or somewhat elevated above the surrounding skin, with *raised and well defined edges*. It is free from marginal or surrounding induration, of a granulated appearance, and seldom attended with considerable pain. It varies from the size of a pea to that of a shilling; but when neglected or improperly managed, it sometimes increases to a much greater extent. It occurs most frequently on the external surface of the prepuce and body of the penis, and is sometimes met with on the anterior aspect of the scrotum. In some instances this variety of ulcer surrounds the orifice of the prepuce, and occasions, when the ulcer heals, a permanent phymosis. It is generally tedious in its progress, and does not manifest any tendency to spread. This ulcer has not the smooth fungus appearance of the former variety, and is strictly defined in its circumference. Venerola superficialis, when left to itself, is almost invariably followed by constitutional symptoms. These consist *usually* of a *pustular eruption* coming out in succession, and terminating speedily in scabs and superficial sores, so that, "at the same time, on the same individual, there will appear some new formed pustules, and others in their scabbing stage, with an intermixture of small ulcers, whose crusts have fallen off, and of discoloured patches of the skin, where they have healed." Considerable inflammation and ulceration of the tonsils and pharynx, attended with pains resembling acute rheumatism, are particularly apt to follow this variety of primary ulcer. Mr. Evans asserts, that he never met with an instance that was not followed by

secondary symptoms. Mr. Carmichael thinks that this variety of venereal disease forms "the natural link between the simple ulcer and its consequences, and the phagedenic venereal disease."

3. *Venerola indurata*, or the *indurated sloughing* primary ulcer.—This variety of venereal ulcer is characterized by great derangement of the general health, much inflammation of the part, local pain, a strong tendency to sloughing or destruction of the parts, and by a cartilaginous induration of the base, unless seated on the glans. The situation of this sore is frequently at the duplication of the prepuce behind the corona glans, in which case the ulcer generally *burrows* deep between the skin and body of the penis. When it is situated on the internal surface of the prepuce, which is very common, the peculiar hardness of the base is very remarkable; and the surface of the sore, whether seated on the prepuce or glans, presents a dark, liver-coloured slough, "which falls off, and is succeeded rapidly by other sloughs, destroying the parts rather in depth than in breadth." (Bacot.)* When the general and local inflammatory action is very severe, mortification to a greater or less extent is by no means uncommon. Mr. Evans says, that he has "known gangrene to take place as early as twenty-four hours after the appearance of the disease, and in less than seventy-two hours after the venereal connexion. When these sores heal, they are apt to leave indurated spots, which are peculiarly disposed to ulcerate again from irritation, or want of cleanliness. (Evans.) This variety of sloughing ulcer is distinguished from the phagedenic ulcer by the presence of the indurated base. The constitutional symptoms commonly show themselves at a very early period, even before the active progress of the ulcer is completely arrested, and do not differ materially from those which succeed the next variety—namely:

4. *The phagedenic primary ulcer* of Carmichael.—This ulcer exhibits an irregular, corroded appearance, without granulations and surrounding induration. It sometimes spreads rapidly, and causes extensive destruction of the parts in a few days. Sometimes it "creeps on slowly, healing in one part and making progress in another." The internal use of mercury very generally renders its course more rapid and destructive. It is usually seated on the glans near the prepuce, which "it often entirely consumes, and continuing its depredations on the corona and glans, at last effects their total destruction. When this event takes place, the ulceration usually receives a sudden and permanent check; but in some instances, profuse hæmorr-

* Observations on Syphilis, principally with Reference to the Use of Mercury in that Disease. By John Bacot, Member of the Royal College of Surgeons, &c.

hage occurs before the glans is entirely destroyed, and a favourable change occurs in the ulcer. Occasionally, though indeed rarely, the disease slowly proceeds until the whole penis is destroyed. (Carmichael.)

It is highly probable, as Dr. Emerson observes,* that the two last varieties of venereal ulcer owe their characteristic phenomena "more to circumstances of climate, constitution, and habits of the patient, than to a peculiar or distinct specific virus." Of this, indeed, I do not in the least doubt. "A southern climate predisposes most to these forms of primary syphilis, which are comparatively rare in the more northern and temperate latitudes. In the south of Europe the predisposing causes seem to be far more active, and particularly so in their operation upon northern visiters. The crews of our men of war and merchantmen have occasionally suffered very much from this form of syphilis in the Mediterranean, especially on their visits to the Italian and Spanish ports." Persons of a scorbutic and irritable habit—and especially those whose constitutions have been impaired by breathing an unhealthful atmosphere, or by a spare and unwholesome diet, or finally, by long residence in hot climates, are most liable to the sloughing and phagedenic varieties of venereal ulcerations. (Evans, l. cit. 109.)

According to Carmichael, the secondary constitutional symptoms of the last two varieties of primary ulcer are: tubercles, pustules or spots of a pustular tendency—degenerating quickly into ulcers, with thick scabs, healing usually from the centre, while the ulceration spreads along the circumference. Strong fever often ushers in this eruption; but in many cases a general feeling of indisposition, of listlessness, palid countenance, languid eye, and broken rest, precede for several days, the appearance of the eruption, unaccompanied by distinct febrile movements. In other instances, "nocturnal headachs, tenderness of the scalp, slight dyspnœa, with soreness of the sternum and of the breast, generally occur previous to the appearance of the constitutional symptoms." *Phagedenic ulcerations* in the throat, tending to destroy the pharynx; the spongy bones of the nose; soft palate and tonsils; *severe and obstinate pains in the joints*—particularly of the knees and wrists; and obstinate *enlargement of the testes*, are among the most common constitutional affections from primary ulcers of this kind. When the ulcers in the throat extend into the larynx, which is not very uncommon, "there is but little chance of saving the patient's life." This occurrence is announced by "a whispering stridulous voice, constant cough, and copious expectoration of

* See his edition of Carmichael's work on Venereal Diseases. Philadelphia, 1825, p. 164.

viscid matter; restlessless, great anxiety of countenance, emaciation, night sweats, rapid pulse, and all the concomitants of phthisis."

Treatment.—In perusing the various writers of acknowledged authority on this subject, it would seem almost impossible to come to any satisfactory conclusion, as to the proper mode of treating both the local and general symptoms of this malady. All indeed agree, that in genuine syphilis, mercury is indispensable to the removal of the disease; but this forms but a small portion of the great number of venereal cases met with in practice, and it is moreover admitted, and very justly too, that it is frequently almost impossible to determine, from the external character of the disease, whether it is true *lues*, or only one of the various venereal affections which have been described. Some writers condemn the use of mercury, without exception, in the various non-syphilitic venereal affections; others admit its utility in certain varieties and under certain conditions, but they disagree among each other, as to the particular varieties and circumstances which call for its employment. Others, again, less scrupulous in the use of mercury, affirm that, with very few exceptions, and under cautious management, it may not only be safely, but very beneficially, used in almost every variety of primary and secondary venereal affections.

The result of all this disparity of opinion would seem to be, that there is a "proper medium," in relation to the employment of mercury in affections of this kind; and that the entire rejection of its aid is just as apt to lead to disastrous consequences, as its indiscriminate and universal employment. Mr. Bacot observes, that "with the exception of the sloughing and phagedenic venereal sores, the exhibition of mercury, in the majority of primary ulcers, is so safe and so generally beneficial, that where a sore of this kind continues for a certain time to pursue its course, and to resist all those mild methods of cure, both external and internal, which influence the progress of sores in other parts, I should not hesitate to have recourse to its exhibition." In reference to the late discussions concerning the non-mercurial treatment of venereal affections, this experienced writer makes the following observations, to the correctness of which I am entirely disposed to subscribe. "It is assumed, therefore, as an established fact, that all ulcers upon the parts of generation are curable without the use of mercury; but I cannot concede that, generally speaking, they are cured with equal celerity: they require more strict confinement; more attention to the state of the general health and to regimen, than is found necessary under a mercurial treatment carefully conducted; and in some instances, the length of time requisite for their complete cicatrization, is alone a se-

rious evil. It may also be added, that under the non-mercurial treatment, they frequently heal with hardened and elevated cicatrices." It must be admitted, moreover, that a much greater proportion of cases are followed by constitutional symptoms, when the primary stage is treated without mercury, than where a cautious exhibition of this mineral is resorted to. "From these circumstances, therefore," says Mr. Bacot, "I would advocate the moderate and gentle use of mercury in all those cases of primary sore, where a mild mode of local and general treatment is productive of no beneficial change in the course of a reasonable period; *at the same time being perfectly prepared* to do without it in all those cases, and in those constitutions, where its employment appears to be pernicious, being convinced that it is both much wiser and more safe to postpone the exhibition of this remedy where the habit is irritable, and it appears to operate upon the system as a poison only, calling into action that peculiar and anomalous class of symptoms usually called *cachexia syphiloida.*" (Loc. cit. p. 35.)

Mr. Hennen also observes: "In every primary ulcer I would give up the idea of using mercury at first, treating it as if it were a simple ulceration, by cleanliness, rest, and abstinence, and applying to it the most simple and mildest dressings. If the sore did not put on a healing appearance in a reasonable time, the extent of which must depend on the circumstances of the patient, I should make use of more active dressings. But if beyond all calculation it remained open, I should certainly not sacrifice every dislike to mercury, knowing how many persons have been seriously benefited by a judicious and mild administration of that remedy." These sentiments appear to me unexceptionable, as general precepts, and I have for five or six years uniformly treated the cases that have come under my care in conformity with them. It will be proper, however, to give a more particular detail of the management of the various primary ulcers. *The simple venereal ulcer—venerola vulgaris,* usually runs its course in spite of remedial applications; and where the irritation is not considerable, nothing but the lightest emollient dressings are necessary, so long as the scab has not separated and exposed the fungoid and raised surface of the ulcer. Warm emollient poultices should be applied until the crust comes away, when the ulcer is on the external part of the penis; when the ulcer is seated on the inner surface of the prepuce, a piece of linen kept constantly moist with a weak solution of lead should be laid over the part; and when phymosis attends, the same liquid should be frequently injected with a syringe between the prepuce and glans. When the scab separates and exposes a raised and fungous ulcerated surface, nothing in general answers better than the application of a weak solution of the sulphate of

copper (in the proportion of about four grains to an ounce of water), two or three times daily; and in the advanced stage of the complaint, the same may be injected under the prepuce, if phymosis attends. I have derived much benefit in the fungoid state of this variety of venereal sores, from the application of citrine ointment softened down with an equal proportion of lard. The *aquæ phagedenica*—made by dissolving eight grains of corrosive sublimate in four ounces of lime water, or a very weak solution of lunar caustic, may also be usefully employed. All such applications, however, should be weak, for the object is not to destroy the raised surface of the ulcer by an escarotic, but simply to stimulate it. Mr. Carmichael recommends the zinc ointment, either alone or mixed with a third or fourth part of the citrine ointment. During the early stage, the patient should use a light unirritating diet; remain quiet, take mild aperients; and where the constitutional irritation is considerable, venesection and perfect quietude in bed are proper.

When phymosis attends, emollient poultices, an efficient blood-letting, and nauseating doses of antimony should be resorted to. Sometimes the violent attendant inflammation terminates in the formation of matter under the ligament of the penis. In this case the tension and pain are excessive and obstinate—the skin becomes discoloured, but from the extreme tension of the part no fluctuation can be felt. The excessive pain, induration, tension, and obstinacy of the affection, are the only circumstances by which the formation of pus under the ligament can be discovered. If the matter is not evacuated by a free incision into the dorsum penis, it usually makes its way up the dorsum, and escapes by an ulcer near the pubis.

Venerola superficialis, or the primary superficial ulcers with elevated and perfectly defined edges, are seldom benefited by stimulating and caustic applications; and they often do manifest harm. Moderately astringent and soothing applications are in general beneficial—such as weak solutions of sulphate of zinc, sugar of lead, althea or tutty ointment. When the constitutional irritation is very considerable, the lancet, purgatives, antimonials, and other refrigerant diaphoretics, with local, emollient, and sedative applications, will be necessary. The internal use of mercury generally renders the progress of primory ulcers, with elevated edges, extremely obstinate. "I have frequently," says Mr. Carmichael, "seen mercury exhibited in full doses, maintaining a strong mercurial action in the system for several months, without inducing ulcers of this kind to heal."

In the indurated sloughing ulcer, where there is much surrounding hardness, and the surface of the sore covered with a dark liver-coloured slough, from which a thin dark-coloured ichorous fluid issues, mercury, according to the exprience of

Mr. Bacot, is decidedly beneficial, until the hardness of the surrounding parts disappears; but it does not appear that the most careful administration of this medicine is capable of *preventing* the constitution from the secondary symptoms; but when the copper-coloured eruption has once made its appearance, "it is as much under the influence of mercury as the primary sore"—disappearing in general without difficulty, under the moderate employment of this remedy. When the constitutional irritation is high, and a disposition to gangrene manifested, attended with great anxiety, heat, and dryness of the skin, furred tongue, and much pain and swelling of the prepuce, vigorous antiphlogistic measures must be adopted—the lancet, cathartics, antimonials in nauseating doses, cold applications, and a rigorous antiphlogistic treatment are indispensable in such cases; and the patient should remain in bed. After the local and general inflammatory action is moderated, and the system is much debilitated, recourse should be had to tonics—particularly quinine and opium; and the separation of the sloughs may be promoted by warm emollient poultices. Mercury can only be safely employed where the surrounding inflammation and pain are moderate. The sores must be dressed with mild applications—such as weak solutions of acetate of lead, or a solution of sulphate of copper, in the proportion of two grains of the sulphate to an ounce of water, or the black lotion, (calomel ℈i., limewater ℥vi.)

The phagedenic, soft, sloughing primary ulcer, and which is wholly free from the very conspicuous surrounding hardness, is often especially unmanageable. The most prompt and vigorous antiphlogistic measures are necessary to arrest the progress of the ulceration; but *the employment of mercury, in this variety of primary ulcer, is almost invariably pernicious, "and often productive of the worst consequences"* (Bacot.) The measures to be confided in during the inflammatory stage are: rest in a recumbent posture; venesection; nauseating antimonials; warm fomentations injected under the prepuce, or applied by steeping; warm emollient poultices; together with the internal use of opium, hyoscyamus, and cicuta. When the violence of the inflammation and the active progress of the ulceration has been moderated, and the ulcer "creeps slowly along," healing in one place while it advances in another, *a weak solution of the nitrate of silver* (one, two, or three grains to an ounce of water), "or the *black* or *yellow mercurial washes*, agree well in some cases, while in others no applications seem to be capable of checking the progress of the ulceration." (Carmichael.) If spontaneous hæmorrhage ensues in such obstinate cases, an immediate check to the progress of the disease is usually the result. Mr. Carmichael states, that he has in some instances derived the most decided advantage from "paring off

the irregular and jagged superficies of the ulcer, and encouraging the bleeding afterwards by immersing the part in warm water." When a band or strip of integument connects one portion of the ulcer with another, or the ulcer has separated the frenum from the glans, and the disease has assumed a chronic state, it will be proper to divide it by an incision.

In sloughing ulcers, without indurated bases, we may often derive much benefit from stimulating applications. Carmichael particularly recommends Venice turpentine, or balsam copaiva, mixed with one or two parts of olive oil. I have known very prompt advantage derived in sloughing ulcers of this kind, from the application of poultices made of crumbs of bread and a strong decoction of *oak-bark*. A lotion of one part of the tincture of myrrh to seven parts of camphorated mixture, may also be very beneficially applied where the sloughs are extensive. (Carmichael.) A pure air is all-important in the management of this variety of venereal sores.

The true syphilitic chancre.—When early resorted to, the excision or destruction of the chancre with caustic will not unfrequently succeed in arresting the further progress of the local affection, as well as in preventing the occurrence of the secondary constitutional symptoms. This practice is, however, not always free from unpleasant consequences, for although the sore may thus be speedily healed, buboes will occasionally appear; and at other times "the virus, confined under the eschar produced by the cautic, corrodes the parts underneath, and forms a deep ulcer." In irritable and depraved constitutions, too, the irritation produced by the caustic is apt to give rise to very injurious consequences. Swediaur asserts, that he has seen "the most dreadful symptoms produced by this application." Although mercury is unquestionably our only means for counteracting the formation of secondary affections, it does not appear that it possesses any especial controlling power over the primary local affection. Nevertheless, as it is of much importance to protect the system against the occurrence of a general syphilitic taint, it will be proper to put the patient at once under the use of a gentle mercurial course, in conjunction with proper local applications to the chancre, unless the primary sore be irritable, and the general system inflammatory, or of a manifestly depraved or scorbutic habit. When these latter contra-indicating conditions to the employment of this remedy exist, measures must be previously taken to remove the irritable and phlogistic state of the system, by pure air, diaphoretics, opium, and laxatives. Most of the recent writers recommend the mildest local applications—simple ablution to keep the parts clean, and dressing the chancre with dry lint, or the most soothing ointments; and in the majority of instances, these will be found better than the irritating applications for-

merly so much employed. Swediaur, however, is a strenuous advocate for the employment of the red oxide of mercury mixed with lard, as a local remedy for syphilitic chancre. He also speaks very favourably of the effects of "finely powdered corrosive sublimate, mixed with a little saliva, and rubbed for five or six minutes, once or twice a day on the ulcers. These remedies, he asserts, are generally highly useful, notwithstanding the assertion of modern writers." To sum up all, he says, "I am of opinion that mercury topically applied, is never injurious in syphilitic ulcers; but on the contrary, that it is extremely serviceable, and almost sufficient to effect a cure, when the ulcers are local, and arise from a primary disease; lastly, that it is always necessary when the progress of the disease is rapid and alarming." I have repeatedly resorted to applications of this kind with very satisfactory results, although, in general, I have abstained from them until the system was put under a moderate mercurial influence. My usual mode of proceeding, is to destroy the chancre with lunar caustic, when I am consulted during the first five or six days after its appearance; but where the chancre has already made considerable progress, I, at first, simply keep the parts clean by frequent ablution, and direct it to be dressed with simple cerate; as soon, however, as the system is moderately impregnated with mercury, I destroy the callous edges of the chancre with caustic, and direct the sore to be dressed with red precipitate ointment; or to touch it frequently during the day with a solution of the sulphate of copper (four grains to an ounce of water;) or finally to wash it repeatedly with the black mercurial lotion. The mercurial impression should be kept up for six or eight weeks; but it is of the utmost importance that the patient avoid a damp and cold atmosphere, and he should be particularly cautious to keep up an equable action of the skin by warm clothing; and to use mild and unirritating diet, and to abstain wholly from the use of stimulating drinks. During damp and variable weather there is great risk of receiving injury from cold, while the system is under the mercurial influence; and to avoid this accident, the patient should, if possible, remain within doors.

The treatment proper for the removal of the constitutional venereal symptoms, has been particularly a field of much contention—all turning upon the point, how far *mercurial remedies* may be necessary or injurious in the management of these affections. It is now, however, very generally admitted, that in what are termed the *pseudo-syphilitic* symptoms, the employment of this potent remedy may often be very properly dispensed with—that it is calculated under certain circumstances to do much injury, and that in no instance is it necessary to carry its employment to the great extent which was formerly so indiscriminately and generally practised. Nevertheless, we

may upon good grounds, I think, refuse to join in the hue and cry set up against the employment of mercury in venereal cases —for there is much reason to believe that many of the baneful consequences which have occurred from its administration, have proceeded rather from its *abuse* than its *use*, or from accidental influences contravening its salutary influence. The most violent declaimers against mercury, are those who have practised in hot climates—and in military and other hospitals, and generally among patients whose previous modes of living were such as to deprave the general constitutional habit—all of which circumstances are certainly very well calculated to interfere with the salutary operation of this remedy, and to convert it often into a decidedly deleterious agent.

It must indeed be admitted, that the various forms of constitutional venereal affections may in general be ultimately removed by a long course of the usual diaphoretic ptisans, proper regimen, and other simple measures, calculated to improve the general health of the system. This is more especially practicable so long as the secondary symptoms are confined to the skin and throat; but even in this stage of the progress of such affections, the moderate and gentle use of mercury will almost always greatly expedite the cure, and in some instances will be found indispensable to the entire eradication of the malady. Although very generally a mild mercurial influence regularly sustained, will be sufficient to procure all the benefits that may be derived from this remedy, yet instances do sometimes occur, which after a long course of gentle mercurial action, without any permanent advantage, will readily yield to a full salivation. About four years ago, I met with a striking illustration of this fact. The patient had for three years laboured under secondary venereal symptoms, which were the consequence of a phagedenic primary ulcer. He had undergone three moderate, but long continued mercurial courses, with only very temporary benefit, and during the eight months immediately before I saw him, he daily took the sarsaparilla decoction and syrup—of the latter of which he had already taken above forty bottles. His nose and internal fauces were much ulcerated, and various painful swellings on the ulnæ, tibiæ, and cranium, had reduced him to a most distressing condition. I put him immediately upon the use of large and repeated doses of calomel, and confined him to his bed. In five days very profuse ptyalism was induced, which was kept up for two weeks, and then left to subside gradually, under the use of sarsaparilla infusion. In six weeks he was entirely cured, and he has since enjoyed, apparently, a perfect state of health.

The *papular* form of venereal eruptions, will very generally disappear under the use of antimonials and sarsaparilla, with a mild and unirritating regimen, aperients, the warm bath,

and an avoidence of a variable, damp, and cold atmosphere. Nevertheless, where this eruption continues obstinately, and the patient's strength declines, recourse should be had to mercurial remedies; which will rarely fail in a short time to manifest a most beneficial effect.

The *tubercular eruptions* which usually appear on the eyebrows, forearms, back, and hairy scalp, and which at last become converted into irregular crusts, leaving ragged, ill looking ulcers of a glassy, shining, and level surface when they separate, are in general decidedly benefited by a mild mercurial course, after the general phlogistic symptoms which usually usher in the eruption have been reduced by venesection, antimonials, aperients, diluent drinks, &c. Carmichael recommends the free use of the decoction of sarsaparilla and antimonials in this variety of the disease; and where the secondary ulcers are extensive and irritable, with phagedenic edges, the use of free doses of cicuta, in conjunction with the compound decoction of sarsaparilla, is often highly beneficial. The internal use of the nitrous acid too, is sometimes very efficacious, where the tubercles spread in foul and irregular ulcers; and it may be very conveniently given in union with the sarsaparilla. Although Mr. Carmichael advocates the non-mercurial mode of treating this and some other varieties of secondary venereal affections, he "does not wish to be understood as wishing to exclude the use of mercury altogether, for the cure of this most formidable of venereal complaints. It is against the *abuse* not the use of this remedy I contend." The fact appears to be, that where from idiosyncracy, or a peculiar, irritable, and scorbutic condition of the system, the operation of this remedy is not diverted from its ordinary salutary effects, it may in general be employed with as much advantage in this as in any of the other forms of secondary venereal affections. Mr. Bacot asserts it as his conviction, that the tubercular variety of eruptions, with its consequent ulcerations, is in general "strikingly benefited by the mild employment of mercury."

Without, however, extending these observations as to the particular circumstances under which the employment of mercury may be proper or improper, it will be sufficient to observe, in a general way, that in all instances where the cutaneous and other secondary symptoms do not yield in a reasonable course of time to the use of sarsaparilla, the compound decoctions of the woods, antimonials, rest, an equable temperature, and simple and unirritating diet, recourse should unquestionably be had to a more or less active course of mercury. Where the constitutional symptoms are attended with much general irritation or febrile excitement, the use of mercury ought to be delayed until the general phlogistic and irritable habit of the body has been moderated by the use of the measures just indi-

cated. It should also be particularly borne in mind, that where the ulcerations in the throat are attended with high inflammation and swelling, mercury cannot in general be safely administered until this local inflammatory condition has been moderated by general antiphlogistics, emollient gargles, the inhalation of aqueous vapour, perfect rest, low diet, and nauseating antimonials.

In instances attended with an irritable habit of body, much advantage will usually result from the employment of opium or hyoscyamus in conjunction with mercurials. This combination is more especially necessary in cases attended with much pain in the extremities or bones, and where the mercury seems to augment the general irritation. So far as my own limited experience has enabled me to judge, I am well satisfied that the regular employment of full doses of Dover's powder will in general very materially enhance the good effects of mercury, under almost every variety and circumstance of the disease.

One of the most important observances in the employment of this remedy, is the rigid avoidance of a cold, damp, and variable atmosphere. If the patient can be induced to remain in his room, which should, however, be kept perfectly clean and well ventilated, and at a uniform temperature, the beneficial influence of the mercury will be much more certainly obtained than when he walks about in the open air, unless the weather be warm and dry. The diet too should be of the lightest and least irritating kind, and every sort of stimulating drink must be especially interdicted.

It has already been stated that in the commencement of the constitutional symptoms, it often becomes necessary to employ measures for the reduction of the general phlogistic habit, before mercurial remedies can be with propriety resorted to. It may also be observed, that even in inveterate cases, the use of aperients, the warm bath, and especially the compound decoction of sarsaparilla, continued for three or four weeks, are often decidedly useful preliminary measures to the employment of mercury.

With regard to the extent to which the mercurial action is to be carried, no precise rules can be laid down, for the management of secondary venereal affections. It is admitted, nevertheless, that it seldom becomes necessary to induce full ptyalism—a moderate and equable action, maintained for a considerable length of time, being commonly sufficient to procure all the advantages that can be derived from this remedy. To this, however, exceptions will occur; and where the disease does not yield under the combined influence of an alterative course of this medicine, and the usual diaphoretic or depurative ptisans, we ought certainly to push the mercury to the full extent of

its influence, where no symptoms or circumstances exist which seem to contraindicate its vigorous employment.

Some difference of opinion prevails as to the preparation of mercury most eligible for the treatment of venereal affections. In recent cases the blue pill, with or without ipecacuanha, is generally preferred. In chronic syphilitic affections of every form, I have scarcely ever employed any other mercurial than the corrosive sublimate in doses of from one-eighth to one-sixth of a grain, with two grains of the extract of cicuta, three times daily.

Professor Zondi has, within a few years, published a new mode of using mercury in chronic venereal complaints, which I have known employed in two instances with extraordinary success. He makes one hundred and twenty pills out of twelve grains of corrosive sublimate, and directs them to be taken in the following way: On the first day one is taken; on the second none; on the third two; on the fourth none; on the fifth three pills; and so on, increasing the dose by one pill every other day, and omitting them on the intervening days, until they are all taken, by which time the cure is completed. During the treatment, infusion of senna is to be taken, so as to keep up a regular action of the bowels, and the patient is restricted to half the ordinary quantity of his food, and is permitted to leave his house only during very fine weather. About two years ago I saw this plan of treatment put in practice with complete success. The patient was affected with venereal nodes and caries, with ulcers on different parts of his body, and had been long wholly unfit for any kind of employment. I had him under treatment for six months; three of which he used the compound decoction of sarsaparilla, and the three last months he was under an alterative course of mercury, without deriving any particular benefit from all I prescribed. He was then admitted into the Pennsylvania Hospital, and underwent two full mercurial courses, but he came away without being in the least relieved. My friend, Dr. Mœring, had expressed to me a wish for a proper subject to put Zondi's mode of treatment to a fair trial. I took him to this patient: he prescribed the corrosive sublimate in the above way, and in five weeks the patient was relieved of all his symptoms; and he is now perfectly healthy, and has made several long voyages since he underwent the treatment.

Sarsaparilla and *guaiacum* in the form of a ptisan, are, without doubt, highly valuable remedies in the treatment of venereal affections; and in conjunction with antimonials, a simple diet, warm bathing, and aperients, will often remove the milder forms of the disease without the aid of mercury. Although I should not be disposed to depend solely on these means, yet the *sarsaparilla decoctions*, in common use, can hardly be omitted with

propriety, in conjunction with mercurials, in the cure of such affections. A great variety of formulæ have been proposed for preparing these ptisans; but the following are acknowledged to be among the most effectual.* An excellent mode of administering mercury, is to give it in solution in a ptisan of this kind.

As a local application to the chronic and foul ulcers which occur in some instances on different parts of the body, as well as to those which are seated in the fauces, the black or yellow mercurial washes, or a weak solution of blue vitriol, will in general answer a very good purpose.

BUBOES.

Buboes are often extremely troublesome affections; and in irritable and scorbutic habits, or from an abuse of mercury and

* Rad. sarsaparil. ℥ii.
Flor. barag. officin.
Petal. ros. gall.
Fol. sennæ
Sem. sem. anis. āā ℥ii.
Sacch. communis.
Mel. despumat. āā ℔ii.

Boil in a sufficient quantity of water to extract the virtues of the sarsaparilla. Strain, and add the sugar and honey; and boil it down to the consistence of a syrup. To each pound of the syrup may be added *one* grain of corrosive sublimate. The dose is from one to two ounces twice or thrice daily. This is the *Sirop de Cuissinier*.

R. Rad. sarsaparillæ
Liq. guaiac. offic. āā ℔i.
Fol. senn.
G. arab. āā ℥i.
Rad. zingiberis ℥ss.
Aq. fontanæ ℔x.

Boil the two first ingredients in water for one hour; strain, and add to the residuum the same quantity of water as before, and boil it for two hours, and towards the end of the boiling add the other ingredients: strain, and to both decoctions add—

Sacch. communis.
Mel. opt. āā ℔iii.

Boil the whole to the consistence of a syrup. The dose is ℥ii. twice or thrice daily. This is the rob antisyphilitic of Laffecteur.

I have used the following syrup with peculiar advantage:

R. Rad. sarsaparillæ ℥iii.
Fol. chimaphyllæ umbel. ℥ii.
Sulphuret. antimonii enclosed in a linen cloth, ℥i.
Aq. bullient. ℔iii.

Boil it down to three half pints; then add—

Mel. despumat. ℥viii.

Dose—a wine-glassful four times daily.

improper exposure, often give rise to the most destructive and unmanageable ulcerations. Buboes may arise either from mere sympathetic irritation, or from absorption of the venereal virus. The former variety of buboes is not uncommon in virulent gonorrhœa, and they arise often from the superficial ulcerations and patchy excoriations which occur on the internal surface of the prepuce and glans penis. Sympathetic buboes often disappear as soon as the primary local irritation upon which they depend is removed. They, however, sometimes become indolent, and remain stationary for a long time. In instances of this kind, mercurial frictions, blistering, or simple emollient poultices, will either dispose them to disperse or to proceed to suppuration, after which they readily heal. I have lately used frictions with the *hydriodate ointment*, in a case of indolent sympathetic bubo, with marked benefit.

Swediaur divides buboes into the *tonic* and *atonic;* a distinction which is frequently verified in practice. The former are attended with symptoms of active inflammation in the tumour, and with an evident phlogistic state of the general system. The pulse is full, hard, and quick, and the local pain violent and constant. The *atonic* bubo is accompanied with the reverse conditions—the symptoms being indicative of general debility.

So long as the inflammation is not very high, or signs of commencing suppuration have not yet made their appearance, efforts should be made to disperse the tumour as speedily as possible. It is a common opinion among people, that the dispersion of a bubo without bringing it to suppuration, is apt to be followed by dangerous consequences, from a supposition, that the venereal poison may be retained in the system, and give rise to subsequent unpleasant affections. For this apprehension, however, there is not the least foundation.

Many practitioners are in the habit of depending chiefly on mercurial frictions on the tumour, or on the inner surface of the thighs for the purpose of discussing buboes; but this practice is very rarely followed with success, unless active antiphlogistic means, both local and general, be employed at the same time. The most efficient means for the reduction of inflamed buboes, where the general habit is phlogistic, are: local and general bleeding, saline purgatives, nauseating doses of tart. antimony, a very simple and unirritating diet, perfect rest, together with cold astringent lotions—particularly lead-water to the tumour, and mercurial frictions on the inner surface of the thighs. When the general irritation or phlogistic excitement is not considerable, venesection may be dispensed with; but in instances attended with a bright red erysipelatous appearance of the skin over the tumour, in robust and plethoric habits, scarcely any thing will avert suppuration, except

very efficient general blood-letting. When these measures do not arrest the progress of the bubo, and its tendency to suppuration is uncontrollable, means should be used to promote the suppurative process; and for this purpose, I know of nothing better than emollient poultices.

In atonic buboes, advancing slowly, and remaining for weeks in nearly a stationary condition, without manifesting a tendency either to suppuration or to resolution, the application of blisters to the tumour will often succeed in dispersing it, or at all events expedite its termination in suppuration. Both Mr. Carmichael and Mr. Bacot recommend blisters as in general decidedly the best applications to indolent buboes. The former observes that, "in such cases, (hard and indolent buboes,) the greatest advantage may be derived from the repeated application of blisters to the indurated bubo, which soon either causes the dispersion or suppuration of the tumour; and Mr. Bacot says it is a practice which he has pursued for nearly fifteen years, with the most satisfactory results. (Loc. cit. p. 24.)

When buboes of this kind occur in persons of a languid and feeble state of the body, much benefit will sometimes be derived from a generous diet, and the use of tonics and wine. When we fail to disperse the tumour, and it has been brought to suppurate, the matter should not be suffered to ulcerate an opening through the integuments. A free incision, with a common abscess lancet, should be made into the cavity and the matter evacuated. When the buboes advance to suppuration, while their integuments are firm, and but little discoloured, Mr. Bacot advises the passing a small seton through the base of the tumour. Mr. Swediaur and some other writers, however, think it much better to suffer suppurated buboes to open spontaneously by ulceration; for the artificial opening, he says, "is often made too early, before the abscess is fully maturated. This, however, is an argument rather against the improper, than the judicious use of the lancet; for it is not improbable that an incision made before the tumour is fully suppurated, may give rise to unpleasant consequences. It is undoubtedly proper to delay making an incision until the abscess appears to be matured, but after this has been brought about, it is difficult to conceive any advantage from suffering the matter to remain some days longer confined.

When the abscess is laid open, it will generally heal under the use of gently stimulating ointments and emollient poultices; but in some instances the ulcerative process continues; or the abscess acquires an indolent and unfavourable character, which prevents it from healing. In syphilitic bubo, mercury will be indispensable; but where there is a scrofulous or a scorbutic habit, and in instances where the general system is

enfeebled and irritable, the worst consequences will sometimes follow the active employment of mercurials. When a bubo assumes a more unfavourable aspect under the use of mercury, it should be immediately discontinued, and the sarsaparilla decoction freely used; and in feeble habits, recourse must be had to cinchona, the mineral acids—particularly the nitrous acid, with a generous diet and pure air. When the opened abscess remains stationary, soft, and flabby, discharging a copious thin ichorous fluid, we may inject a weak solution of sulphate of copper, or of the yellow mercurial lotion (corrosive sublimate gr. x., lime-water ℥viii.) into the cavity, and apply stimulating cataplasms—such as a common poultice with a few drachms of cinchona mixed with it; or pieces of linen moistened with the tincture of galbanum over the sore. The internal use of opium or cicuta in full doses will also be particularly serviceable in cases of this kind. The regular use of the latter narcotic is especially valuable in cases attended with symptoms of scrofula.

When the bubo opens while a portion of it remains indurated, Mr. Swediaur recommends repeated cathartics, and the application of irritating remedies, such as the mercurial ointment, weak solutions of corrosive sublimate, &c. The solution of sulphate of copper, or the black mercurial wash, will often answer well in such cases.

Sometimes the ulcers formed by suppurated buboes become surrounded with projecting, indolent, and undermined edges; "and if these edges are not removed by art, the ulcer will remain for months, and perhaps years, without healing." In such cases, says Carmichael, "caustic, however powerful, is so slow in its operation upon the extensive and undermined edges of the buboes, that I always make use of the scalpel for their removal; and this treatment has caused many of them to heal in five or six weeks, which would have resisted any other mode of practice as many months. Full courses of mercury always increase their tendency to *burrow*, and to extend their circumference."

In foul and sanious ulcers of this kind, without the elevated and indurated edges just mentioned, much benefit will sometimes result from charcoal or carrot poultices; and where the surface is spongy and indolent, the application of *nitric acid* by strips of linen moistened with it, often produces a very excellent effect.

CHAPTER XXXIII.

AMENORRHŒA.

This is one of the most common forms of menstrual disease, which, though sometimes borne without any material inconvenience, seldom fails ultimately to derange the general health, and unless remedied, often leads to the most distressing and dangerous consequences.

The exciting causes of amenorrhœa are exceedingly various. Every thing which is capable of deranging the general health, has a tendency to excite irregularities or suppression of the catamenial discharge. Organic and inflammatory visceral affections—more especially pulmonary consumption—chronic hepatitis, and gastro-intestinal phlogosis or irritation, are rarely unaccompanied by menstrual irregularities, and often by a total and obstinate suppression of this evacuation. Mental emotions, particularly protracted grief and despondency, and sudden terror or violent anger have a powerful tendency to arrest the catamenial discharge. Metastasis of rheumatism—of erysipelas—and of chronic cutaneous affections; habitual hæmorrhoidal discharges, as well as other varieties of hæmorrhage, leucorrhœa, and deficient and unwholesome nourishment may also give rise to this affection. But by far the most common cause of amenorrhœa is *cold*, operating on the system either during the interval of the menstrual periods, or immediately before the menses are about to appear, or finally during the actual flow of the evacuation.

When the exciting cause acts during the interval of the catamenial periods, the menses will either not make their appearance at the next period, or they will, perhaps, begin to flow sparingly for a few hours, and then cease. In general, no material inconvenience is felt from the absence of the evacuation, and in some instances it returns spontaneously at the succeeding period. Occasionally, however, considerable uneasiness in the pelvic region, pain in the loins, irregular determinations of blood to the head or chest, and in nervous subjects, various hysterical symptoms, are the immediate consequences of the suppression. But although the system frequently bears the suppression of this evacuation without any material unfavourable consequences during the first six or eight weeks, more or less derangement of the general health invariably ensues, if the menses fail to make their appearance after the second or third period. The usual symptoms which ultimately arise from this affection are: languor and debility; a pale and sickly expression of the countenance; swellings of the ankles; various

nervous affections, such as paroxysms of palpitation of the heart and dyspnœa; flatulent and spasmodic pains in the bowels; loss of appetite; and in relaxed and leucophlegmatic habits leucorrhœa. In subjects predisposed to phthisis pulmonalis, or to some other local or general disease, protracted suppression of the catamenial evacuation is always particularly dangerous, from its strong tendency to develope such affections.

When the menses are suddenly suppressed, whilst they are flowing; or when the remote cause of the obstruction is applied immediately before the impending appearance of the evacuation, the consequences are much more violent and sudden. In such cases, the most alarming symptoms sometimes almost immediately follow the suppression of the discharge. In some cases paroxysms of violent spasmodic pains occur in the bowels and stomach, attended occasionally with severe retching. In other instances, strong determinations of blood take place to the brain, giving rise to raving delirium, hysteric mania, convulsions, or a temporary loss of sensation and voluntary motion. Sometimes extremely alarming palpitations of the the heart, with great difficulty of breathing occur; and in some cases the irritation passes at once upon the sanguineous system, occasioning high febrile reaction, and local inflammatory affections.

Treatment.—When one or more of the violent affections just mentioned succeed the sudden suppression of the menses, the first object must be to allay the alarming and painful symptoms, without any immediate attention to the restoration of the evacuation. The attempt, indeed, to reinstate the catamenial secretion, at the period when it becomes arrested, is almost always abortive; yet the remedies which may be proper to palliate or remove the present symptoms, will occasionally have the effect of bringing back the suppressed evacuation.

In young and plethoric subjects, or where strong determinations of blood take place to the head or lungs, efficient venesection should be promptly resorted to. We can, indeed, seldom allay the violent spasmodic and painful symptoms very materially by this measure alone; but in the habits just mentioned, it constitutes an essential preliminary to the successful employment of other remedies—particularly *opium* and *ether*, which in most instances afford more speedy relief than any other remedies we possess. Active cathartics and purgative enemata, sinapisms to the inferior extremities, warm pediluvium, and antispasmodics, are the principal means to be relied on. In weak and nervous females, it will not be necessary, and often improper to bleed. In cases of this kind, warm pediluvium, with a few full doses of laudanum and camphor, will in general speedily allay the alarming and painful symptoms which often accompany this accident. Dr. Dewees states, that he has found

nothing to answer so well where the pain in the stomach or lower part of the abdomen is severe, "as an injection composed of a gill of thin starch, a tea-spoonful of laudanum, and thirty grains of finely powdered camphor; and if it be complicated with hysteria, the addition of three tea-spoonfuls of the tincture of assafœtida, instead of the camphor, may be useful." I have in several alarming instances known very complete relief obtained from the injection of laudanum into the bowels; but where the stomach will retain the medicine, it will act more promptly when administered by the mouth. Little or no benefit, however, will result from an ordinary dose of this narcotic in cases of this kind. From two to three grains of opium, with ten or fifteen grains of camphor, should be given at once. It should be particularly recollected that where the tendency to cephalic congestion is strong, or in full, young, and vigorous subjects, an efficient abstraction of blood must be premised to the use of these remedies. In one case of suddenly suppressed menses, attended with wild raving and paroxysms of extreme pain in the stomach, half an ounce of the tincture of secale cornutum completely allayed all the symptoms in less than fifteen minutes.

A vast variety of remedies have been recommended for the purpose of restoring the suppressed catamenial evacuation; but we may safely affirm that the amount of injury which has been done by the indiscriminate and unseasonable exhibition of medicines of this kind, (*emmenagogues*) is incomparably greater than that of all the advantages which have as yet resulted from their employment. I do not wish to be understood as condemning, unqualifiedly, the use of such remedies; for under judicious management, they are not only often decidedly useful, but in some cases, indispensable to success. The practice, however, of resorting to active emmenagogues in the beginning of the treatment, without an especial regard to the general state of the system, and the peculiar circumstances of the case, under an idea that they possess a direct or specific power of restoring this secretion, has been, and no doubt will continue to be, the source of various and irremediable mischief.

Amenorrhœa in young subjects is at first almost invariably accompanied by a manifest phlogistic habit of body. In instances of this kind, moderate abstractions of blood, aided by a simple and unirritating diet, laxatives, and regular exercise in the open air, are all-important remediate measures. Where the disease has developed local inflammations, or sustains irregular determinations to internal organs, especial means should be used, in conjunction with the general remedies just mentioned, to counteract the local affection, before any direct attempt is made to excite the uterine vessels. Blisters, rubefacients, the warm bath, antimonials, &c. may all be beneficially employed under circumstances of this kind.

When the suppression occurs in relaxed and debilitated females, with a small, feeble, and languid pulse, the first object should be to invigorate the general system, and to improve the digestive and alvine functions. Iron ;* mild tonic bitters ; a simple, but nourishing diet ; exercise by gestation, and gentle aloetic aperients ;† are especially indicated in such cases. I have derived much advantage in amenorrhœa, attended with languor and debility, from the *black sulphuret of iron*, in union with small portions of ipecacuanha. Five grains of the former, with one of the latter, may be given three times daily. It is proper to observe, however, that even in cases attended with much languor and weakness, mild aperients are sometimes important remedies, preliminary to the employment of tonics ; for it is not uncommon to find the bowels exceedingly loaded in such cases. and there can be but little advantage derived from invigorating measures, so long as this condition of the intestinal canal continues.

Sometimes cases that come on slowly, and apparently without any direct exciting cause, will be found, on close examination, to be connected with chronic irritation, or phlogosis of the mucous membrane of the bowels, from a remora of fecal matter in the bowels, or from the habitual use of a superabundance of coarse, irritating, or indigestible aliment. I have recently seen a remarkable instance of this kind. The patient, a labouring woman, about twenty-five years of age, had suffered a long time under amenorrhœa, and the usual attending nervous symptoms. When I first saw her, she was debilitated, and considerably emaciated, but stated that her appetite was very craving. As she ascribed all her complaints to the absence of the menstrual discharge, she had taken a great deal of medicine, obtained from one of our public charitable institutions, for the purpose of "bringing on her courses." On examination I found her abdomen tumid and hard, the tongue like a piece of raw flesh along the edges and point, and the appetite voracious—in short,

* R. Ferri. phosphat. ʒi.
Pulv. zingiberis ʒii.
——— aloes soccot. gr. v.
M. Divide into ten equal parts. S. Take one twice or thrice daily.
Or,
R. Extract. gentian. ʒi.
Sulphas. ferri. gr. iv.
G. aloes socc. gr. v.
M. Divide into twenty pills. S. take one every morning, noon and evening.

† R. Pulv. rhæi. ℈iv.
G. aloes ℈i.
Pulv. capsici. i.
Muc. g. arab. q. s.
M. Divide into twenty pills. Take two at night on going to bed.

with all the symptoms of high irritation of the mucous membrane of the stomach and bowels. I ordered her a few doses of castor oil, and put her on the exclusive use of rye-mush and milk for her diet, with which she faithfully complied. In four weeks the tension and fulness of the abdomen had subsided, and the tongue presented a much better appearance. The diet was continued, with the addition of a little weak animal broth at noon, and I prescribed an emulsion of balsam copaiva, in small doses, to be repeated thrice daily. This she continued for four weeks, at the end of which time she thought herself quite well, although the menses had not yet returned. She was now put on the use of the following pills,* which in two weeks restored the long suppressed catamenia.

By thus pursuing a general treatment adapted to the particular circumstances of the case, we may often restore the menstrual evacuation; and should we even fail in effecting this purpose, we shall, nevertheless, gain some advantage, by placing the system in a condition favourable to the operation of the remedies more directly calculated to act upon the uterine system.†

Dr. Dewees speaks in the highest terms of praise of the *tincture of guaiacum* as an emmenagogue. "I have for more than eight and thirty years," he says, "almost daily used this medicine in suppressed catamenia; and more especially in those of long standing, *without its having failed in any case* proper for its use,—that is, where the suppression was not the consequence of disease of the uterus or of pregnancy." This is, indeed, great praise; for Dr. Dewees must have treated perhaps several thousand cases of this affection during the long period he mentions. That Dr. Dewees has been eminently successful with the employment of this remedy is unquestionable; yet it may be mentioned as a singular circumstance, that although I have employed it in no small number of cases of this affection, and, as I thought, in a vigorous and persevering manner, I have never known it to procure the least apparent benefit, ex-

* R. Sulphat. ferri. gr. v.
G. myrrh
G. aloes aa gr. x.
M. Divide into twenty pills. S. Take one every morning, noon, and evening.

† These remedies appear to promote the menstrual evacuation, solely by their tendency to determine the blood to the pelvic viscera, or more particularly to the uterus; and it is hence obvious, that where symptoms of high irritation or chronic inflammation of the uterine system are present, all medicines of this kind are highly improper. When, for instance, a puruloid leucorrhœal discharge attends, with other signs of vaginal irritation, purgatives, low diet, rest, emollient injections into the vagina, and, perhaps, local bleeding, are indispensable preliminary measures.

cept in one case only. It must be observed, too, that although the doctor's mode of employing this remedy has been for many years well known to the practitioners of this city, I have, as yet, met with none who has been even moderately successful with it. Dr. Dewees himself notices this fact. "I have learned," he observes, "that some of my brother practitioners have not been equally successful with it—but I think I can readily account for their failure; first, from their not placing the system in a proper situation for its use; and, second, by not properly persevering in the remedy."

The medicine in which I have hitherto most confided as an emmenagogue, after the system was duly prepared by general treatment, is aloes, in small doses, in combination with the extract of savin and ipecacuanha, according to the following formula.* I have, indeed, often failed with this medicine; but, upon the whole, I have more frequently succeeded with its employment than with any other article or combination. The tincture of melampodium, too, has occasionally succeeded well in my hands; and within the last few years, I have employed the spirits of turpentine with success in several cases. Where hysterical symptoms attend, peculiar advantage may sometimes be obtained from the following pills.† The tincture of cantharides too, has been highly recommended as a remedy in this affection. Dr. Joseph Klapp, of this city, has published an account of his experience with this article, from which it would appear, that under judicious management, it will often operate very beneficially‡. It should be given in gradually increased doses, beginning with twenty or twenty-five drops three times daily, until a slight degree of strangury is produced, when it must be omitted, and resumed when the urinary affection has subsided. This article is certainly worthy of particular attention as an emmenagogue, after proper evacuations have been made. I have but seldom prescribed it; but in one of the few instances in which I employed it, the menses were very speedily restored after it was carried to the extent of causing slight strangury. This remedy is especially adapted to cases that are attended with leucorrhœa—but in such instances, it is particu-

* R. G. aloes sacc. gr. xv.
Extract. sabin. ℈ii.
Pulv. ipecac. ℈i.
Mucilag. g. arab. q. s. M. Divide into forty pills.
Take two pills three times daily

† R. G. aloes ʒii.
— asafœtid. ʒii.
— myrrh. ʒss.
Sulph. ferri. ʒss. M. Divide into three grain pills.
Take two twice daily.

‡ Med. Recorder, vol. i.

larly important to reduce the local inflammatory action of the vigina, by proper local and general remedies, previous to the employment of the cantharides. There is, indeed, scarcely an end to the number of articles and combinations that have been boasted as remedies for exciting the menstrual secretion; but so far as my experience enables me to judge, they are all much more apt to fail than to succeed in restoring the suppressed catamenial function. Dr. Lavagna within the last five or six years, has published an interesting statement of the good effects of injections of the *aqua ammonia*, diluted with water, into the vagina, as a remedy for the suppression of the menses. Dr. Hosack also has reported a case of ten years' duration, which yielded to the employment of the ammonia in this way. Ten or twelve drops of the *aqua ammoniæ puræ*, mixed with an ounce of milk or water, is to be thrown into the vagina by means of a syringe four or five times daily. If this does not produce a very perceptible sensation in the part, a few drops more of the ammonia must be added to the subsequent injections; but if the irritation be excessive, the quantity must be diminished. Dr. Hosack diluted a drachm of the ammonia with a pint of rain-water, of which a syringe full was thrown into the vagina three times daily. The cure was accomplished in five weeks.* I have heard of but one instance of the employment of this remedy in this city; and in this case it failed in doing good. The testimony, however, that has been published in its favour is respectable, and well worthy of attention.

DYSMENORRHŒA.

Painful and imperfect Menstruation.

Dysmenorrhœa is a common, and generally an extremely harassing affection. It may occur at every period during the menstruating stage of life; but it appears to be most common between the twentieth and thirtieth years of age, and in subjects of an irritable and sanguineous temperament. In many instances severe pains are experienced in the back, loins, and lower part of the abdomen, for five or six hours previous to the appearance of the menstruous evacuation. This however, soon ceases, and an immediate aggravation of the torturing pain follows. Sometimes the catamenia begin to flow moderately with little or no previous pains; but in an hour or two they become suddenly arrested, at the same time

* New-York, Med. and Phys. Jour.

that violent pains come on in the hips, hypogastrium, loins, back, and thighs, with a distressing sensation of forcing or bearing down in the pelvis. Occasionally a very slight menstrual discharge continues uninterruptedly for three or four days, accompanied throughout with extremely severe pains in the pelvis and lower portion of the abdomen; and in some rare instances, the catamenial evacuation, although attended with great suffering, is sufficiently copious and prolonged in its course, and may even exceed the regular duration and quantity of an ordinary healthy menstruation. (Jahn, Burns.) In by far the greater number of cases, however, the evacuation as has just been stated, begins to flow moderately, and after an hour or two ceases again, under great sufferings. Some patients are much harassed by severe headach or nausea, and paroxysms of violent retching and vomiting during the first few hours of the complaint.

These pains continue for a period, varying from two or three hours to several days, terminating commonly in the discharge of a pseudo-membraneous substance from the vagina, similar in appearance to the *decidua*. Females labouring under painful menstruation generally experience two distinct kinds of pain; namely: the intermitting expulsive pains resembling those of labour or abortion; and the constant menstrual pains in the back, pelvis, loins, and thighs, which occur often in regular menstruation, shortly before the appearance of the evacuation. (Dewees.)

Dr. Dewees observes, that there are two distinct states of this affection, which in a prognostic point of view are worthy of attention. Thus, in some cases the mammæ sympathize strongly with the uterus—becoming tumid, and often very painful and tender to the touch; whilst in other cases the breasts remain wholly free from any affections of this kind. The former variety of cases, says Dr. Dewees, are much more manageable than the latter—an observation which I believe to be well founded, however inexplicable it may be.

Some writers seem to think that the formation of a pseudo-membraneous substance upon the internal surface of the uterus is always present in this affection, and constitutes in all instances, the immediate cause of the difficult and painful menstruation. This, however, does not appear to be founded on correct observation. I have known females to suffer very painful and incomplete menstruation for two, three, or four periods in succession, and afterwards menstruate regularly without any particular difficulty, where no membraneous matter whatever was at any time discharged. It must moreover be observed, that painful menstruation is not universally attended with a scanty flow of the catamenial fluid. I have met with several instances where, in point of quantity and duration,

there was nothing irregular in the menstruation, but where notwithstanding extreme suffering attended each menstrual period. This, we may reasonably presume, could not take place, if the internal surface of the womb were coated with false membraneous matter. It may indeed be supposed that the bloody secretion in such cases is furnished by the vessels of the mouth of the womb, or even by those of the vagina; but this assumption is, I think, extremely improbable. It cannot, however, be denied, that in very many cases such membraneous concretions are present, and exercise a direct agency in the production of the difficulties which occur in this affection. It is nevertheless certain, that these masses of concreted lymph are themselves the product of a morbid action of the secreting vessels of the uterus; and there can scarcely exist a doubt, that this diseased vascular action may of itself produce the difficulty and pain in question, independent of the formation of pseudo-membraneous matter.

I cannot accord with Dr. Dewees, in his notions concerning the etiology of this affection, or rather "of the membraneous productions so often yielded in dysmenorrhœa."

"Before I attempt an explanation of the formation of this membrane," he says, "I must direct the attention to a very remarkable circumstance in the character of the menstrual blood, namely, its not possessing the property of coagulation. From this it appears that the blood, or a part of it, has suffered some change by the action of the uterine vessels; and that this change has been imposed upon the coagulating lymph by the process of secretion. Now, it is not difficult to suppose that the uterus, like every other organ, may have its functions impaired; in consequence of which the texture of the coagulating lymph, instead of being subdued as it is wont to be when the uterine secretory action is perfect, remains nearly the same as when it entered this viscus; except that it may be attenuated, as in some inflammatory diseases: and it will, from this imperfect elaboration, be thrown into the cavity of the uterus, without being dispossessed of the power of separation and of coagulation. It is poured into the uterus in a very gradual manner; and from this circumstance may tarry there sufficiently long to separate into its constituent parts; the coloured part or red globules, from their greater weight, will leave the imperfectly subdued lymph, and fall to the bottom of the uterus, and sooner or later be discharged; while the coagulating lymph, either in part or altogether, will be left to spread itself over the internal surface of the uterus, and there quickly assume, as is usual with it when in contact with living parts, the appearance of a membrane."*

* A Treatise on the Diseases of Females, second edition, p. 91.

These sentiments appear to me not only contrary to well established pathological principles, but most unquestionably, also, to the phenomena of dysmenorrhœa. That the menstrual action of the uterus is morbid or deranged, is, indeed, sufficiently obvious; but so far from this derangement consisting in an *impaired* or enfeebled action of the uterine vessels, every phenomenon clearly indicates that the vessels of the uterus are in a state of *increased* excitement, amounting perhaps in many cases to a sub-inflammatory action. The sense of fulness, tension, and pain in the pelvis, loins, and back; the accelerated, quick, and tense pulse; the hot and feverish skin, are strong manifestations of inordinate excitement and sanguineous congestion in the uterine system.

Lymph is never thrown out in such a state as to form membraneous matter, except from inflamed, or at least highly irritated surfaces. The formation of such concretions is, indeed, one of the most certain evidences of previous inflammatory action in a part. Most assuredly Dr. Dewees will not contend that the *decidua*, which strongly resembles the membraneous masses thrown off in dysmenorrhœa, is formed by an impaired action of the uterine vessels, and in the manner stated in the above quotation. It may be observed too, that if incrustations of lymph arise from the gradual separation of blood retaining its coagulability, in consequence of impaired or deficient action of the uterine vessels, we should, no doubt, frequently meet with these pseudo-membraneous formations in the slow and protracted uterine menorrhagia, which are apt to occur about the period of the final cessation of the menses—which, so far as I know, has never been observed. From an attentive estimate of the phenomena of this affection, as well as from analogy and certain established principles in pathology, we may, I think, conclude, that in dysmenorrhœa generally, whether attended with the formation of membraneous structures, or devoid of such concretions, the uterus is in a state of much sanguineous congestion, attended with an irritable and highly irritated condition of its vessels. The discharge at first flows moderately for a short time; but the action of the vessels appears soon to transcend the grade of menstrual secretion, and, instead of the catamenial fluid, lymph is often secreted by the irritated vessels, which concretes on the internal surface into the form of a membraneous substance. This opinion of the pathology of dysmenorrhœa is much strengthened by the fact, that all medicines that have a tendency to *excite* the uterine vessels, as the usual emmenagogues, are uniformly pernicious. Would this be the case if the disease were the result of an *impaired* action of these vessels?

From much close attention to this disease for the last six or seven years, I have been led to believe that it is very frequently

dependent on a *rheumatic affection of the uterus.* In a case which I attended some time ago, the connexion of rheumatism and this affection was strikingly illustrated. The patient, of an irritable and sanguineous habit, was very subject to rheumatic pains in the left, and sometimes in the right ankle joint, which often continued for several weeks. For more than five years, she observed that whenever she felt the pain in the joint at the menstrual period, she menstruated with little or no difficulty; but when the period returned while the ankle was free from pain, she invariably suffered excruciatingly during the very sparing and transient flow of the menses.

Treatment.—The treatment of dysmenorrhœa is divided into *palliative* and *radical;* the former to allay the extreme suffering during the presence of the affection; and the latter, to prevent its recurrence, by means employed during the interval of the attacks.

I have already observed that all emmenagogue remedies, or such as are calculated to determine the circulation to the pelvic organs, are always highly improper. Dr. Dewees considers *camphor* in large doses as decidedly the best palliative remedy we possess in this painful affection. He recommends the administration of ten grains of this article every hour, until the pains are in a great degree allayed; and when the stomach will not bear it, he advises its use in the form of an enemata. I have used this remedy with much benefit in some cases; but I have almost invariably prescribed it in union with Dover's powder, in the proportion of six or eight grains of the former to four grains of the latter, every hour. If we can early induce a general perspiration, the painful symptoms almost always speedily decline. To promote this intention, it will be proper to confine the patient to bed, and to direct the use of warm, diaphoretic diluents—particularly elder blossom, or eupatorium perfoliatum tea. *Opium*, given in full doses, with small portions of ipecacuanha, so as to excite nausea, but not vomiting, is, perhaps upon the whole, the best palliative, where the patient is capable of taking this narcotic without the disagreeable effects which, in some habits, it is apt to produce. It may be advantageously given in combination with camphor, in the proportion of a grain of the former to eight of the latter, every hour until the symptoms are mitigated. Dr. Dewees mentions a case, which was cured by the use of *secale cornutum;* but this case does not appear to me to merit the title of *dysmenorrhœa.* It would seem to have been an instance of menorrhagia, accompanied by frequent severe pains occasioned by the contractions of the womb to expel the coagula. The *warm-bath* will occasionally afford considerable relief in dysmenorrhœa, more especially when it is used in conjunction with camphor or opium. *Bleeding* is often decidedly indicated, and al-

though it does not appear to be capable of exerting any direct influence over the symptoms, it is an important auxiliary, or preliminary measure, where the pulse indicates its use, to the employment of the means already mentioned.

In instituting a course of treatment for the radical cure of dysmenorrhœa, particular attention must, in the first place, be paid to the general state of the system. In plethoric and phlogistic habits a mild vegetable diet must be enjoined, and it is especially important to attend to the state of the digestive and intestinal functions. When there are signs of a loaded and torpid state of the bowels, it will be highly important to adopt a course of mild aperient treatment, before recourse is had to remedies more immediately directed to the uterine system. An occasional dose of blue pill in the evening, with a gentle purgative on the following morning, should be used until the bowels are put in a healthy condition. Jahn asserts, that the occasional employment of ipecacuanha emetic will sometimes afford very considerable advantages in this affection. When the diathesis is manifestly phlogistic, and the pulse tense or active during the intervals of the attacks, small abstractions of blood, and even antimonials, in conjunction with a vegetable diet and aperients, are obviously proper. When the disease is accompanied with a rheumatic or arthritic diathesis, the warm bath, gentle diaphoretics, particularly decoctions of lignum guaiacum, and small doses of the flowers of sulphur, will often be found especially useful.

Among the various remedies that have been recommended as particularly calculated to prevent the recurrence of the affection, the *tincture of guaiacum* is at present most generally relied on by the practitioners of this city. Dr. Dewees, who introduced this article to the notice of the profession as a remedy in dysmenorrhœa, regards it as incomparably the most efficient means we possess for counteracting this affection. It should be given in as large doses as the stomach will bear, and its use persisted in for three or four months, and even longer, if its good effects are not previously obtained. Dr. D. observes, that it is not uncommon to find the first return of the menstrual period, after commencing the use of this remedy, attended with unusually severe symptoms; and he considers this as a favourable symptom. I have employed it occasionally, but with very indifferent success. The remedy with which I have most frequently succeeded in effecting a cure, is the *extract of stramonium*. It is now about six years since I first resorted to this article for the cure of this affection, and I have on record a considerable number of cases that yielded to its powers. My mode of employing it is to give the one-eighth of a grain of the extract (Clutterbuck's preparation) three times daily, commencing about four days before the expected return of the at-

tack. I am persuaded, from what I have witnessed of its powers in this way, that we possess no other article which can, at all, be compared to it as a remedy in this affection. Immediately previous to commencing with its use, the bowels should be freely opened by a purgative, and the patient ought to abstain from all kinds of stimulating food and drink.

The decoction of *polygala senega* has been recommended as a means for curing this affection. Dr. Chapman has expressed his confidence in its powers; but it does not appear that his experience on this head has been sufficiently confirmed by others, to have gained it any reputation in this respect. Formerly I employed it freely in five or six cases, but in no instance with success.

I have known an instance where a salivation, accidentally caused by a mercurial purge, removed the complaint effectually. What would the tincture of colchicum do in cases of this kind? If my notions concerning the rheumatic nature of this affection be correct, it would seem reasonable to expect advantage from this remedy.

LEUCORRHŒA.

Fluor Albus.

This affection consists in a morbid secretion and discharge of a mucus, or muco-purulent fluid from the vagina; and is, perhaps, the most common disease to which females are subject. It may occur at every period of life, from infancy to old age, but its appearance between puberty and the final cessation of the menses is by far the most common.

The causes of leucorrhœa are very various. In general, whatever is capable of relaxing the system, as a luxurious, indolent, and sedentary manner of living; habitual exposure to a humid atmosphere, and want of pure air and wholesome nourishment, are especially calculated to predispose to the occurrence of this disease. Females of a relaxed, leucophlegmatic, and nervous habit of body are particularly liable to leucorrhœal discharges; whereas those of a rigid fibre, and a robust and muscular structure, are comparatively but rarely affected with this disease. Every thing which is capable of causing irritation in the mucous membrane of the vagina, and of establishing a preternatural determination of blood to the genital organs, may excite leucorrhœa. But the tendency of causes of this kind to give rise to the disease, depends nevertheless in a great degree on the previous constitutional predisposition to this affection; for in many healthy, robust, and active females, scarcely any

vaginal irritation, from accidental causes, will produce more than a temporary increase of the mucous secretion. In individuals, on the contrary, of an opposite habit of body—particularly when favoured by luxurious living and indolence, the slightest additional irritation of the mucous membrane of the vagina will be apt to excite a more or less permanent morbid secretion from this membrane. The following are the most common and powerful *exciting causes* of this disease. 1. *Excessive venereal indulgence.* Prostitutes, even though previously unaffected with gonorrhœa, are rarely free from morbid vaginal secretions of a leucorrhœal character. 2. *Difficult parturition*, or the irritation caused by the employment of obstetrical instruments. 3. *Frequent and profuse menorrhagia* is frequently followed by leucorrhœa, being usually sustained by the same causes or circumstances that gave rise to the hæmorrhagic discharge. 4. *Prolapsus uteri* is almost invariably attended with more or less leucorrhœal discharge, in consequence of the continued vaginal irritation by the dislocated uterus. 5. *Ascarides*, by keeping up a constant irritation in the rectum and neighbouring parts, or *by passing into the vagina*, is no unfrequent exciting cause of leucorrhœa in young girls and children. 6. *The abuse of emmenagogues*, particularly when unseasonably employed for bringing on what is often injuriously supposed and treated as tardy menstruation about the age of puberty, often gives rise to obstinate leucorrhœa. 7. *A loaded and torpid state of the bowels*, is a common cause of this complaint in young females. 8. *Tight lacing or dressing about the waist*, by pressing the viscera down upon the uterus, and causing prolapsus, or a descent of this organ from its natural position into the vagina, as well as by impeding the free circulation of the blood in the portal vessels, is a fertile source of leucorrhœa among young and fashionable females. I will venture to say that of late years, since the preposterous custom of pressing the waist into as narrow a space as cords and steel springs can bring it, has been so general, there are more instances of prolapsus and leucorrhœa among young females than at any other former period, when the abdomen was a little better accommodated with room. 9. *The depressing mental emotions*, by debilitating the general system and favouring a sluggish circulation in the portal system of vessels, may give rise to the disease. 10. *Metastasis of rheumatism*, &c. is, I conceive, much more frequently concerned in the production of this affection than is generally supposed. It is by no means uncommon to find females affected with leucorrhœa to complain of more or less pain in the joints, and I have satisfied myself that the vaginal disease is not unfrequently a purely rheumatic affection. 11. *Self-pollution* is by many of the German writers regarded as one of the most fre-

quent sources of this disagreeable affection in young females. 12. *Atmospheric influences*, particularly vicissitudes of temperature, and a warm and *humid* atmosphere. It is said that in Holland, where the air is always loaded with much moisture, leucorrhœa is a very common affection. 13. *Suppressed hæmorrhoids;* diseases of the uterus; tumours pressing upon the vagina; mechanical injuries; the intemperate use of spirituous liquors, &c. may all give rise to the disease.

Some females are invariably affected with a more or less profuse leucorrhœal discharge for five or six days immediately after the completion of each menstrual evacuation; and others experience the disease only some days previous to each appearance of the menses, remaining in a great measure, or wholly free from it during the remainder of the menstrual intervals.

Symptoms.—In some instances, the discharge has the appearance of the common vaginal mucus. In others it is white, resembling pulverized starch mixed with a mucilaginous fluid. Sometimes it presents the appearance of pus, possessing an acrid and corroding quality. These differences in the appearance of the discharge, indicate the relative degrees of violence of the affection.

In point of quantity also, great diversity occurs in different cases. In some instances it is so moderate as hardly to occasion any inconvenience, whilst in other cases the evacuation is extremely copious. When the discharge is very profuse and of an acrid quality, the external parts of the genital organs become red, swollen, and painful, and this state of irritation usually extends into the vagina and even to the mouth of the uterus, rendering the whole passage and especially the os tincæ very tender to the touch.

When the disease is suffered to continue, it seldoms fails at last to make an injurious impression upon the whole system. The countenance at length becomes pallid and sickly; the eyes dull, languid, and surrounded by a bluish or lead-coloured circle; the eyelids tumid; the mind dejected, discontented, and fretful; the whole system debilitated and sluggish; the extremities cold; the pulse small and feeble, or small, frequent, and somewhat corded; the digestive functions deranged, attended with acid eructations, gastralgia, pains in the back, loins, and lower extremities; colic pains in the lower part of the abdomen, constipation or diarrhœa, and pain in voiding the urine.

By degrees the discharge usually becomes more and more copious and purulent; the relaxation and languor of the muscular system increase, whilst the pulse becomes more frequent and irritated. At length, in aggravated cases, the slightest bodily exertions give rise to hurried respiration and palpitation of the heart; and in instances of great severity, the powers of digestion at last become exceedingly weak; nausea and vomit-

ing frequently come on, and finally hectic and rapid emaciations arise. Fortunately, however, cases of this violent character are by no means common; the great majority of instances being much less severe, though sufficiently annoying and debilitating, to become a source of much uneasiness and anxiety.

Women who are habitually affected with leucorrhœa, very rarely become pregnant; and where the leucorrhœal discharge is profuse, it may be doubted whether conception can at all take place. In most instances of severe leucorrhœa, the menses are entirely suppressed; and in all cases they are more or less irregular, both in time and quantity. Sometimes they occur at irregular intervals in the form of menorrhagia, but more frequently they appear very sparingly for a day or two, succeeded by an increased flow of the leucorrhœal discharge.

Much discussion has taken place on the question, whether leucorrhœa is a disease of relaxation or debility, or connected essentially with an irritated or inflammatory excitement in the affected parts. It appears to me, however, that it cannot be properly said to be either a disease of debility and relaxation, nor one of irritation or subinflammation, in an exclusive sense. That the mucous membrane of the vagina and mouth of the uterus, is in a state of irritation and even subinflammation in this affection, is indeed not to be questioned; but it must be recollected that irritation or inflammation is by no means incompatible with debility in the same structure. And let it be borne in mind too, that all the efficient remedies for arresting the discharge are such, as are directly calculated to increase the tone of the vessels which give rise to the morbid secretion. Cantharides and astringent injections, are the means most generally relied on in this city, for the cure of this affection. Without doubt, inflammation of an active kind, is often developed in the course of the malady, and requires reduction before the tonic or stimulant remedies just mentioned, can be used with propriety; but that such inflammation is merely accidental and by no means essential to the disease, is manifest, from the continuance of the discharge, after every symptom of an active inflammatory character has been subdued. In relation to the general system at least, the terms *debility* and *relaxation*, may most assuredly be correctly applied to this disease in a great majority of cases. The languor, general weakness, and relaxation, as well as the feeble and sluggish pulse, so frequently noticed in profuse leucorrhœa, are sufficient evidence of the correctness of this observation.

I am by no means disposed to advocate the old doctrine that the discharge is owing to a mere relaxation or passive state of the vessels from which it occurs. The increased flow of mucus is unquestionably the result of a morbid *action* of these vessels; and the immediate cause of this morbid action, consists

in that peculiar deranged condition of the vital properties, designated by the term *irritation*. Nevertheless, this irritation does not imply an *increased power* of action; on the contrary, it is very evident that the vital energies or powers of action of the irritated vessels are, in the instance in question, decidedly impaired. In most cases, the mucous membrane of the vagina is, in the commencement of the disease, merely in a state of irritation. In its progress, however, chronic inflammation is apt to occur from the constant action of the acrid secretions, or from the accidental supervention of new exciting causes, both of a general and local character.

Treatment.—The cure of leucorrhœa is almost always attended with great difficulty; and protracted and severe cases often continue in spite of the most judicious and persevering course of remedial management. Although properly speaking a local disease, leucorrhœa seldom fails ultimately to derange other organs, and to establish by degrees a general state of ill health. This, however, occurs only in protracted and severe cases, or in very delicate and irritable habits. In some instances the general health is impaired before the leucorrhœal discharge commences. Whether primary or consequent, however, the general state of health ought always to be especially attended to, as an important preliminary step in the remedial management of this affection. General or constitutional indisposition is always a most serious obstacle to the restoration of particular functions, or the cure of local maladies. In the treatment of the present disease, this circumstance must be especially attended to.

When the pulse is active, and the general habit phlogistic, it will be proper to commence the treatment with antiphlogistic measures: and bleeding, simple and unirritating diet, purgatives and antimonials should be resorted to in cases of this kind. It will rarely be necessary, however, to practise more than one or two moderate blood-lettings, even under the most obvious indications of its usefulness. Purgatives and low diet, will in general be quite adequate to reduce the phlogistic irritation of the system. In cases attended with indications of a loaded state of the bowels, repeated purgatives are especially demanded; and we frequently find obvious signs of functional disorder of the liver in severe and prolonged instances of the disease, requiring a cautious employment of alterative doses of blue pill and laxatives.

In prescribing more directly for the removal of the disease, particular attention must be paid to the actual condition of the mucous membrane of the vagina, as it is indicated by the appearances of the leucorrhœal discharge.

When the discharge consists of a thick, transparent, ropy mucus, the vaginal mucous tissue is at the lowest grade of leu-

corrhœal irritation. The pulse in this grade of the disease, rarely indicates the necessity of blood-letting, unless accidental causes have increased the momentum of the circulation. In all instances, however, whether the circulation be active or languid, it will be proper in the commencement to evacuate the bowels by one or two purgatives. Where the bowels are tumid, hard, and torpid, which is not unfrequently the case in instances manifestly of general languor and sluggishness of the system, laxatives should be repeated until the bowels are brought to a natural condition.

When the leucorrhœal discharge is white and opake, or purulent, the local applications must, in the first place, be such as are calculated to moderate the vaginal irritation. For this purpose, it will be useful to direct the patient to inject warm water into the vagina three or four times daily, until the tenderness and irritation of the parts are in a great degree removed; and we may in general derive considerable advantage, in this respect, from the injection of a weak solution of sugar of lead after each injection of warm water. By pursuing this management, in conjunction with a simple vegetable diet, laxatives, rest, and, if indicated, blood-letting, the local and general irritation will usually yield sufficiently, in six or seven days, to enable us to resort with propriety to the means more directly calculated to remove the irritation upon which the morbid discharge depends.

Before I proceed to mention the efficient remedies of this kind, it is proper to observe, that especial regard should be had both in the preparatory and final management of the disease, not only to the actual grade of vaginal irritation, but also to the *exciting causes* of the malady. To this latter object, I am inclined to think, there is seldom sufficient attention paid; and yet, it must be obvious, much, and in many instances, almost every thing depends on the adaptation of the remedies to the peculiar circumstances which gave rise to, and, perhaps, still sustain the disease.

Among the internal remedies generally most relied on, for the cure of leucorrhœa, the *tincture* of *cantharides* holds the first rank. This article was, I believe, first recommended as a remedy in this disease by the late Dr. Robertson of Edinburgh; and in this country, Dr. Dewees has for many years employed it with much success. When properly and perseveringly used, after suitable preparatory measures, it will not unfrequently completely remove the disease. I cannot, indeed, assert, that I have been often successful with its employment; but in a few very severe and protracted cases, I have used it with entire success. It may be commenced with, in doses of from twenty to thirty drops three times daily, and gradually increased until it causes a slight degree of strangury. When

this symptom occurs, it must be omitted until the *ardor urinæ* disappears, when it should be resumed; but in smaller doses than those which were last given, and again increased until the neck of the bladder becomes affected. In some instances it will be necessary to continue its employment in this manner, omitting and resuming it according to its effects on the urinary passages, for three, four, or even six months, before the disease will be permanently subdued.

The balsam copaiva also is a valuable remedy in this affection. I have more frequently succeeded with the use of this article than with cantharides; but to most patients it is an exceedingly offensive medicine, and in many instances its effects on the stomach are such, as to render its use wholly inadmissible. To procure any material advantage from it, it should be given in large doses, and continued for three or four weeks. Where it can be thus freely administered, it will rarely fail to make a very decided impression on the disease, and in conjunction with proper local means, often put a permanent stop to the discharge. From forty to sixty drops should be given three times daily, and when the stomach will bear it, the dose may be increased considerably beyond this quantity. I have always found it most conveniently and readily taken in a portion of warm milk; or we may give it, rubbed up with gum arabic, white sugar and water, in the form of an emulsion. When it acts too freely on the bowels, a few drops of laudanum should be added to each dose. The *tincture of cubebs* has likewise been recommended in this affection; but it is in all respects much inferior to the balsam copaiva. In cases entirely free from inflammatory irritation in the affected parts, and where the general habit is not phlogistic, the *spirits of turpentine* may be used with material advantage in some instances. I have lately succeeded in curing a case of this kind with the use of this remedy and astringent injections; but in the majority of instances, it is much too irritating to admit of being employed with propriety.

Where the general habit is languid and relaxed, some advantage may occasionally be obtained from the internal use of tonic and astringent remedies. The infusion or extract of the root of *rhatany*, has been particularly recommended by some European writers; and in a few instances in which I prescribed it, considerable benefit appeared to result from its use. Dr. Dewees states, that he has "effected cures in some obstinate cases by the use of alum and nitre—five grains of alum and ten of nitre given three times daily." I have for eighteen years past been in the habit of prescribing alum in combination with ipecacuanha in this disease, and have often known it to produce the happiest effect. I usually administer it in doses of ten grains, with four grains of ipecacuanha—at first twice, and

after six or seven days, three times daily. This will, in most instances, excite considerable nausea, and occasionally vomiting; but after a few days of employment it ceases to produce this effect; and it has even appeared to me, that the emesis which it usually excites, enhances its beneficial operation.

As soon as the discharge becomes thin and more abundant, and the local inflammatory excitement has been moderated by the general measures already indicated, recourse should be had to astringent injections, in conjunction with the use of the tincture of *cantharides*, or the terebinthinate remedies, or alum powders just mentioned. The *sulphate of zinc* forms an excellent astringent injection in most instances of the disease. At first a drachm to a quart of water will be sufficiently strong to inject with; but its strength should afterwards be gradually increased to two, three, or even four drachms, with the same proportion of water. The sulphate of copper also may be very advantageously used for this purpose. Twenty-five or thirty grains to eight ounces of water, will form an injection of proper strength. I have occasionally found a solution of alum, in a decoction of oak bark, as recommended by some of the older writers on this subject, to procure more benefit than any other injection. A drachm to a pint of water may be used for this purpose. Various other injections have been recommended—such as a strong decoction of oak bark; pulverized kino, mixed with water; decoction of nut-galls, &c. I have, of late years, repeatedly used the diluted *sulphuric acid;* and in most cases with decided benefit. Three drops of the oil of vitriol to an ounce of water will, in general, be sufficiently strong; if it produces no sensation of warmth, or slight uneasiness in the vagina, its strength should be increased. Dr. Marshall Hall observes, that the best mode of employing astringent applications to the vagina in this disease, "is to direct the patient to make a scroll of linen of a form and bulk nearly sufficient to fill the vagina:" this scroll is then fully imbued with a strong solution of the sulphate of zinc, and inserted into the vagina after washing it out with cold water. This tampon or scroll may be renewed every three hours.* Some advantage may occasionally be derived from the application of a blister over the sacrum.

In leucorrhœa depending on prolapsus of the uterus, no treatment can succeed in arresting the discharge until the womb is replaced to its proper position; and this can be done only by the use of a *pessary*. It is to be particularly noted, however, that the introduction of a pessary is altogether out of the question, until the irritation and tenderness of the vagina and womb have been subdued by the local and general antiphlogistic means mentioned above.

* An Essay on Disorders of the Digestive Organs, &c. &c. p. 169.

When the disease is attended with a rheumatic diathesis, or with rheumatic affections, the tincture of guaiacum, and probably colchicum, may be very appropriately employed. Richter recommends camphor and hyoscyamus where the disease has supervened on the disappearance of a chronic cutaneous disease, or some habitual serous evacuation. *Iodine* also has lately been recommended as a useful remedy in this affection. I have prescribed it in two cases, and its use was persisted in for six weeks, without, however, doing any perceptible good.

CHLOROSIS.*

This disease occurs principally in young, *unmarried females*, and occasionally also in married women, at various periods of life. It is not, however, exclusively confined to the female sex, for its occurrence in males, during the period of adolescence, and even at mature age, is sometimes, though indeed but rarely, noticed.

Symptoms.—In the commencement of chlorosis, the countenance exhibits a peculiarly pallid appearance, and the lips especially appear to be bloodless, with a puffiness of the upper and lower eyelids, and a slight appearance of tumidity of the face. The lower eyelids are often encircled with a streak of a dark or leaden hue, and in some instances, the eyelids exhibit a greenish sallow tinge. As the disease slowly proceeds in its course, the whole surface of the body becomes very pale, more especially the hands, fingers, and nails, and presents a white, puffy, and flabby state, with more or less œdema of the ankles and legs, and an evident tendency to emaciation. The tongue is pale, and covered with a transparent mucus, and exhibits a swollen or bloated appearance, with numerous and enlarged papulæ, and the edges indented by the pressure of the teeth. The gums and internal surface of the cheeks also become tumid, and paler than natural, and the breath is generally foul. From the commencement of the disease, much general languor and listlessness prevail, with great indisposition to corporeal or mental exertion. Headach, ringing or noise in the ears, and vertigo, are common symptoms, and the energies of the mind are subdued, accompanied, in many instances with a drowsy, peevish, and spiritless condition. In the more acute cases of chlorosis, considerable pain is apt to be experienced in the hypochondriac regions; and in some in-

* See Dr. Marshall Hall's excellent little work "On the Disorders of the Digestive Organs," &c. &c.

stances cough, oppressed respiration, paroxysms of palpitation of the heart, or partial syncope, "and almost universally a sense of fluttering about the præcordia," are experienced by the patient. The appetite is usually weak; but in many instances there is a distressing morbid craving for particular articles, particularly for acids and absorbent earths, as magnesia, chalk, or even clay. The bowels are generally torpid, with occasional transient attacks of diarrhœa and griping, the feces usually presenting a very unnatural appearance, and the urine thick and sedimentous. The catamenial function always becomes early deranged, and in many cases the menses are suppressed before the occurrence of the chlorotic symptoms.

When the disease continues until it becomes confirmed, the countenance acquires a still more pallid, bloodless, and puffy appearance; the prolabia assume a pale lilac hue, and the skin generally becomes smooth, dry, puffy, and of a singularly pale yellowish colour. By degrees the tongue acquires a clean and smooth surface, and exhibits a peculiar, semitransparent, exanguious, and pale lilac appearance. The general languor and debility increase, and the occasional attacks of pain in the head and side become more severe. In this confirmed stage of the complaint, the morbid cravings of the stomach are often peculiarly strong and singular. The patient experiences an indomitable desire for certain indigestible substances, such as chalk, cinders, sand, coffee-grounds, tea-leaves, flour, clay, &c. The catamenia, if they have not previously ceased, are attended with pain, and become pale, smaller in quantity, and usually terminate in more or less profuse leucorrhœa, where this affection does not precede or accompany the chlorotic disease in its course from its commencement.

In inveterate cases of chlorosis, emaciation goes on slowly, but progressively. The muscular debility is extreme; the œdema increases, and acquires the form of anasarca; the pulse is very small, frequent, and in many instances, quick and corded; the confusion and pains in the head are more permanent; the mind extremely excitable, or unusually torpid and sluggish; and the attacks of dyspnœa and palpitation of the heart become more frequent and distressing. Sometimes diarrhœa ensues—the matter discharged exhibiting a dark, or even black appearance, resembling in all respects the evacuations of *melæna*.

In cases of a more chronic character, "there is a continued though variable state of sallowness, of yellowness, or icterode hue, of darkness, or of a wan, squalid, or sordid paleness of complexion, or a ring of darkness surroundiug the eyes, and extending a little perhaps towards the temples and cheeks, and sometimes encircling the mouth, without tumidity, as well as without the pallidness of the prolabia already mentioned." In the severer cases of *chronic* chlorosis, the nails are apt to be-

come deformed in a peculiar manner, sinking down in the middle, and breaking off in brittle laminæ on the anterior margin. The tongue, in such instances, (chronic chlorosis) exhibits various appearances. In general, it is clean, moist, often of a *bright red*, and sometimes of a light green, or pale lilac colour, with a smooth, shining, or a granulated raw appearance of the surface, sometimes divided into lobules by deep creases, and at others bloated and indented along the margin by the pressure of the teeth. *The blood in chlorosis is usually attenuated, the relative proportion of the crassamentum, or red part, being invariably less than natural.* (Hall.)

Chlorosis is peculiarly liable to frequent changes and exacerbations of its symptoms. Dr. Hall observes, that he has often observed, "an eruption of urticaria, in very large, elevated wheals, sometimes solitary, and at others in considerable numbers, in chlorotic patients.

Diagnosis.—Chlorosis is liable to be confounded with certain forms of *insidious organic disease.* From disorders of this kind, however, we may in general distinguish chlorotic affections, without much difficulty, by the following circumstances. The pallid countenance of organic diseases is usually attended, at times, with a slight flush of the cheeks; and the prolabia are free from that peculiar bloodless and semi-transparent pallidness or lilac hue, which is so characteristic of chlorosis. The countenance, too, is generally expressive of pain and suffering in organic diseases; which is seldom met with in chlorosis, except in the latter periods of aggravated cases; and the whole surface of the body remains either nearly in a natural state, or becomes slightly *icterode,* whilst emaciation usually commences early and proceeds rapidly. From chronic disease of the liver, with which chlorosis is most apt to be confounded, we may distinguish it, by the *icteric* appearance of the conjunctiva, and of the surface generally, as well as the clay-coloured feces, the bilious urine, and the usual tenderness and fulness of the right hypochondrium, which occur in organic hepatic affections.

Causes.—A sedentary and confined habit of life, more especially when assisted by impure or stagnant air, is a common and powerful cause of chlorosis. "The mimosis decolor (*chlorosis*) says Dr. Hall, is the prevailing affection of those females who, in manufacturing towns, are doomed to sit from morning till evening, at the lace-frame, or the tambour, or engaged in mending, seaming, chevening, &c." Unwholesome and indigestible diet, particularly when accompanied with indolence, want of cleanliness, and want of exercise in the open air, is especially calculated to produce this disease. Too long lactation; frequent hæmorrhagies; protracted or long continued menorrhagia; leucorrhœa; the depressing mental

affections; long continued and exhausting labour; and unsatisfied sexual desires; are not unfrequently the source of chlorotic affections. There are few circumstances probably, more frequently concerned in the production of this disease, than chronic intestinal irritation and consequent derangement of the digestive functions. A torpid and loaded state of the bowels, in young females, when co-operating with one or more of the above named causes, rarely fails to give rise to more or less of a chlorotic condition. Chlorosis sometimes occurs, apparently in consequence of the tardy, or non-appearance of the menses, after the sexual organization is fully developed, and the same occasionally results from suppressed menstruation, in females of a delicate and leucophlegmatic habit of body. Occasionally, however, the disease comes on gradually, while the menses are regular, without any obvious exciting cause; but in instances of this kind, the bowels will generally be found, on inquiry, to be torpid, and the appetite variable and disordered.

Treatment.—Little or no benefit can be derived from remedial treatment so long as the exciting causes continue to act on the patient. These, therefore, must be obviated, as early and effectually as possible. If the disease be contracted under the influence of a sedentary habit and an impure or confined air, regular exercise in the open air will be indispensable to the removal of the malady. If deficient and unwholesome nutriment has contributed to the production of the disease, the use of a more pure and nourishing diet is necessary. Where grief and despondency have exercised an injurious influence in this respect, efforts must be made to dissipate the mental depression, by proper society, travel, and conversation.

In the majority of cases, conspicuous symptoms of a loaded or otherwise disordered state of the alimentary canal are present; and to these symptoms of intestinal derangement it is particularly important to pay immediate and especial attention. Dr. Hamilton has laid great stress on the value of purgatives in the cure of chlorosis, and although his estimate of their usefulness is undoubtedly too favourable, it must be admitted, that under judicious management they are generally decidedly beneficial, and in many cases perhaps absolutely indispensable to successful treatment. Where the abdomen is tumid and tense, and the bowels torpid, laxatives must be employed until the accumulated feculent matter has been thoroughly evacuated. It is to be particularly observed, however, that active cathartics, or such as excite copious *liquid* stools, are calculated to do much mischief. Two or three consistent or soft alvine evacuations in the course of twenty-four hours, will be sufficient to procure all the advantages that can be derived from aperients, without the risk of doing injury by increasing the

debility, or exciting permanent intestinal irritation. Moderate doses of aloetic aperients are, I think, decidedly the best remedies for this purpose. From three to four grains of rhubarb, in union with one or two grains of aloes, taken in the evening, will in general procure one or more full and consistent evacuations on the following morning; and this dose may be given every third or fourth evening, until there is reason to believe that the bowels have been freed of their vitiated and accumulated contents. As the liver almost invariably partakes of the morbid excitement of the alimentary canal, it will be proper from time to time to exhibit small doses of blue pill or calomel. Dr. Hall recommends the administration of five grains of the latter article once every week, or every ten or fourteen days, according to the degree of hepatic derangement indicated by the symptoms; whilst "on the intermediate days a sufficient, consistent alvine evacuation must be procured by pills of aloes and rhubarb, or by infusion of senna with sulphate of magnesia." In the use of mercury, the utmost caution is necessary to prevent a general mercurial impression on the system, the object in employing it being solely to correct the hepatic and intestinal secretions. Where the disease continues until diarrhœa, with small, unnatural, and fetid discharges occur, small doses of blue pill, in union with ipecacuanha and the extract of hyoscyamus, will in general afford much benefit. A grain of the blue mass, with two grains of ipecacuanha and one grain of the hyoscyamus, may be given every night on going to bed. I have known this combination to produce the happiest effects in an instance attended with such symptoms. Dr. Hall has obtained very good effects from the conjoined employment of opium and blue pill in cases attended with diarrhœa. If opiates are indicated, Dover's powder will in general do more good than any other preparation of this narcotic.

In conjunction with the use of remedies calculated to correct the hepatic and intestinal functions, it is particularly important to regulate *the diet* of the patient. The aliment should be simple, nourishing, and of the most digestible kind. In the commencement, before the bowels have been adequately evacuated, the more nourishing kinds of farinaceous fluids and light broths should be used, such as preparations of barley, rice, arrow-root, oat-meal, &c.; but after the accumulated feces have been removed, and the hepatic and intestinal secretions have been in some degree corrected, solid animal food,—particularly the lean parts of mutton, lamb, venison, and very tender beef-steak, and boiled fowl, with stale bread or biscuit, should form the principal articles of the aliment; in short, the patient should observe all the dietetic rules laid down for the management of the first stage of indigestion.

The enjoyment of a *pure country air*, and *regular exercise*

by gestation, are powerful auxiliaries in the treatment of this affection; and along with an appropriate diet and gentle aperients, are generally adequate, without any other means, to restore the health of the patient. After the system has regained some degree of vigour, advantage may be obtained from *sea-bathing;* but this will seldom be admissible until convalescence has already considerably advanced. At an earlier period, however, "sponging the body with cold water, or with vinegar and water," or the *tepid* shower-bath in summer, will often do much good; but even these applications cannot be freely used with propriety, where the powers of vital resistance are greatly reduced.

Dr. Marshall Hall does not seem to entertain a favourable opinion of tonics administered internally, with the exception of iron, which he thinks may be used with some advantage. After due alvine evacuations, and an amendment of the intestinal and hepatic secretions have been effected, by the cautious use of aperients and mercury, I am disposed to ascribe very considerable importance to the internal employment of *tonics.* When early employed, and in large doses, previous to the preparation just mentioned, they are, no doubt, well calculated to do mischief, and, at all events, can rarely prove in any degree beneficial. Iron is the best tonic we possess in chlorotic affections. No preparation of iron has appeared to me so useful in diseases of this kind as the *black sulphuret* of this metal. From eight to ten grains may be given three times daily. Its peculiar usefulness would seem to depend on the tendency which it generally manifests to excite a moderate diaphoresis, in conjunction with the ordinary tonic powers of the ferruginous remedies. The *tartrate of iron,* too, is a valuable tonic, on account of its tendency to keep up a regular action of the bowels—so contrary to all the other preparations of this metal. From a scruple to two of the tartrate may be given twice or thrice daily, dissolved in some sweetened water. The *phosphate* and *carbonate* are so apt to give rise to constipation, that they are, in general, objectionable on this account, unless diarrhœa be present, when they may be appropriately used. Richter observes, that after the exciting cause has been obviated, and the alimentary canal sufficiently evacuated, the following combination "cannot be too highly recommended."* Where the digestive powers are much debilitated, we may administer the iron in union with some of the tonic vegetable bitters with peculiar

* R. P. lig. quassiæ
Sacch. alb. āā ℈i.
Flor. martialis. gr. x.—M. Divide into twenty-four equal parts. S. Take one every four hours. This mixture, he says, possesses the advantage of not being liable to cause constipation.

advantage.* Among the Germans, Weckart's pills† have been highly recommended in obstinate cases of chlorosis. Kopp declares that he has employed them with great success in this affection. The chalybeate mineral waters are especially beneficial in chlorotic cases. The use of the ferruginous remedies should be continued until the health of the patient is completely restored. The clothing should be sufficiently warm to favour the regular action of the skin; and the influence of damp and inclement weather must be carefully avoided.

PHLEGMASIA DOLENS.‡

This singular phlegmasial affection is almost exclusively confined to females in the *puerperal state;* and is characterized by a pale, tense, elastic, and extremely tender swelling of one of the inferior extremities; communicating to the touch a feeling of numerous indurated nodules and ridges under the skin; and attended with more or less fever, usually of a hectic character.

As has just been stated, phlegmasia dolens is almost exclusively a puerperal affection; and it appears from general observation, that the most common period of its attack varies between the fifth and ninth days after parturition. It is asserted by some writers (Good), that this disease "has never been known to affect any other part of the body than the lower extremities;" but Carus and some other authors mention instances of its occurrence in the superior extremities.

In general, the first manifestations of the disease are: pain and stiffness in the groin of one side, preceded or accompanied with chills, or strong rigours, followed speedily by the ordinary train of pyrexial symptoms. Occasionally, though rarely, the disease commences by pain and swelling in the foot, an instance of which I saw about fifteen years ago. Wherever the starting

* R. Ferri phosphat. ʒi.
Pulv. cort. aurant. ʒiii. M. Divide into ten equal parts. Give one three times daily.

† G. aloes socc. ʒi.
Ferri. pulver. ℈ii.
Sulph. antimon. aurant. ʒss.
Submur. hydr. ℈i.
Ol. sabin. xx.
Syrup cort. aurant. q. s.
Ut fiant pil. gr. iii. Take two every evening.

‡ The consideration of this disease was accidentally omitted among the phlegmasial affections in the first volume, and is, therefore, here introduced out of its proper place.

point of the disease may be, the swelling more or less rapidly extends itself over the whole limb, and continues to increase until the extremity becomes enormously distended and exquisitely painful to the touch. To the sight the swelling exhibits an even and uniform surface; but when the hand is lightly passed over it, a number of hard ridges and little indurations are felt, apparently immediately under the skin. The skin presents a pale or white, smooth, and glabrous appearance, and is preternaturally warm to the touch. In general, the swelling extends to the labium pudendi of the affected side, leaving the opposite labium and contiguous parts entirely free from tumefaction and pain. More or less tenderness is generally felt in the iliac region of the affected side, and the tract of the round ligament is especially apt to become painful or tender. Mr. Trye, indeed, considers the tenderness in the course of the round ligament as a pathognomonic symptom. Position produces no change in the swelling, as is the case in œdema. When the disease is at its height, the skin of the affected limb is much whiter than that of the sound side; and its temperature is always very considerably augmented. The disease is always attended, from its commencement, with considerable irritative fever, and the patient is generally extremely restless and tormented by her sufferings.

The duration of the disease is very variable. It seldom, however, terminates under two weeks; and it may be prolonged to the fifth week, and even to a longer period. When it is about declining, slight sweats break out over the whole surface of the body, and the urine deposits a reddish sediment, whilst the fever progressively abates. The declension of the swelling is always very gradual, and the leg very rarely returns to the size of the sound one. Some degree of stiffness of the muscles of the leg usually remains after the total subsidence of the disease; and the skin continues for many months to be less moveable on the subjacent parts than in the sound state.

In some instances, though very rarely, the inflammation terminates in suppuration; and when this happens, the cellular membrane sloughs out from between the skin and muscles, as in the suppuration of erysipelas. The occurrence of this accident is always attended with the utmost danger. The only two fatal cases I have ever seen terminated in this way—a termination which, in both instances, was caused by the ruinous treatment of an empiric, under whose mismanagement the cases were placed.

In general the breasts become flaccid, and the secretion of milk is in part, or even wholly suspended. It is singular that this fact should be denied by Dr. Good; for I can affirm, that I have never met with an instance of this malady, in which the lacteous secretion was not conspicuously diminished. Dr.

Housten of this city, in a well written and interesting paper on this disease,* declares that "in all the cases he has seen, the secretion of milk was diminished, and in some wholly suspended during the violence of the disease;" and the same observation is made by nearly every writer on this subject I have consulted.

In relation to the etiology and nature of this affection writer have expressed a great variety of opinions. By many the disease has been ascribed to a metastastic tranferrence of the lacteous secretion from the breasts to the affected limb, giving rise to the deposition of milk into the cellular tissue of the extremity. This opinion was advocated by Puzos, Levret, Astruc, Doublet, Mauriceau, and by nearly all the German writers on this subject until a very recent date. Others have ascribed the disease to an obstruction of the lymphatics at the brim of the pelvis, by the pressure of the child's head during parturition, giving rise to over-distention and consequent *rupture* of the lymphatics, whence effusion and accumulation of lymph in the glands and cellular tissue of the limb ensue. This doctrine was advanced by Mr. White of Manchester; but its fallacy has been abundantly exposed by various writers. Denman and others maintain that phlegmasia dolens consists essentially in *lymphatic inflammation*, commencing in one or more lymphatic glands in the groin, and thence extending along the lymphatic branches until the whole limb becomes affected. The primary inflammation of the inguinal glands is excited, he thinks, by the acrid matter which is absorbed from the vagina. Dr. Hull conceived the disease to consist of inflammation of the muscles, cellular tissue, and inferior surface of the cutis, giving rise to a sudden effusion of serum and coagulable lymph into the cellular texture of the extremity; and according to Dr. Hosack, the inflammation occurs in *all* the structures of the limb—in the blood-vessels, absorbents, muscles, cellular membrane, skin, &c. In relation to this latter opinion, Dr. Houston very justly observes, that it is difficult "to conceive of an inflammation of all the blood-vessels of a limb, without the appearance of redness; or of such extensive inflammation as that involving every tissue of a part, without its termination in suppuration, gangrene, or other bad consequences far more frequently than happens in phlegmasia dolens." More recently, Dr. Davies of London has published some observations tending to show that phlegmasia dolens is the result of an inflammation of one or more large veins, "terminating in the formation of artificial membranes and other obstructions within their cavities, whereby the free return of the blood from the extremity is prevented." This doctrine is also sanctioned by M. Velpeau; but the phenomena of phlebitis are certainly very

* North American Medical and Surgical Journal, vols. iv. and v.

different from those which characterize phlegmasia dolens; and there does not, on comparing these affections, appear to exist any reasonable grounds for this opinion. (Dewees, Houston.)

Whatever we may think of the mode of origin, or the location of the morbid condition which constitutes this affection, there can be no doubt that it is essentially an inflammatory affection; and there exists the highest degree of probability, that the whole system of lymphatic vessels of the limb is engorged and greatly distended with lymph, at the same time that some effusion may occur into the subcutaneous and intermuscular texture. The following sentiments expressed by Dr. Houston, are entirely accordant with my own views on this subject, and as they embrace a clear summary of the arguments on this point, I cannot do better than to adopt his language.

"I believe it to consist in a complete '*engorgement*' of the whole lymphatic system of the affected limb; produced by an inflamed condition of the different conglobate glands, through which the chief lymphatic vessels have to pass, on their way from the affected part, to the thoracic duct.

"This inflammation may occur either primarily in one or more glands, or first in a principal lymphatic trunk, and thence extend to the glands. And this may originate either, 1st, from the gland or lymphatic trunk being bruised by the passage of the child's head through the pelvis during labour: or 2d, from exposure to cold, and especially a damp or humid atmosphere; or the putting on of ill-dried clothes, during the irritable condition of the female system which attends the puerperal state: or 3d, from the absorption of some acrimonious matter, whereby the internal surface of the lymphatics themselves may be excited to inflammation, and thence extended to their appropriate glands; or the matter may be transmitted to the glands, and there excite inflammation. My reasons for the opinions which have been advanced, are briefly as follow:

"1st. The fact of every woman's exposure to one of the preceding exciting causes, and frequently to all of them.

"2d. The uniform occurrence of pain or uneasiness about the passage of the round ligament, in the groin, and down the inside of the thigh, *preceding* the existence of swelling or other affection of the limb whatsoever: showing conclusively the priority of disease in the glands and their communicating trunks.

"3d. The white colour of the affected limb; which can only be accounted for satisfactorily, by supposing an '*engorgement*' of the vessels which carry white fluids; for were it congestion of the blood-vessels, as in ordinary inflammation, there would necessarily be redness, instead of the white aspect.

"4th. The state of the woman's system generally, as the pulse, tongue, hectic form of fever, &c., all of which manifest a state

or condition totally different from what is observed in cases of high and unequivocal inflammatory action; evidencing a state of *irritation*, or inflammatory action of a low or subacute character. This state of irritation may be readily accounted for, by the great distention of the lymphatic vessels of the limb, throughout their utmost ramifications, and the consequent pressure which must thence be made upon the immensity of nervous fibrils by which they are surrounded.

"Lastly. Its termination; which is far more uniform, and less fatal, than an equal extent of inflammation, attended with congestion of the blood-vessels seated in any part of the body; proving, incontestibly, that it must have a course peculiar to itself; which course, very commonly commencing by a diminution of pain in the iliac and inguinal regions, and next of the swelling of the parts nearest those glands, indicates very clearly the seat of the disease to be in the lymphatic system, and especially the conglobate glands."

This doctrine does not differ materially from the views given of the pathology of this affection by Trye, Capuron, Gardien, and Denman.

Treatment.—From what has been said concerning the general character of this disease, it is obvious that the treatment must be decidedly antiphlogistic. Blood-letting, both general and local, are required during the early stages of the complaint. The momentum of the circulation should be at once adequately diminished, by an efficient abstraction of blood with the lancet; after which it will be especially useful to apply leeches to the affected limb, particularly about the groin, and along the tract of the principal trunks of the lymphatics. Dr. Dewees advises that the leeches should be dispersed over the limb, "that their bites may not be too near each other, as they sometimes leave troublesome sores." This precaution is very proper; as I have myself known very obstinate and extensive ulceration to proceed from a number of leech-bites near the groin, in a case of this kind. In some instances the febrile reaction, though not apparently very vehement, yields with great difficulty; and many venesections are required before the pulse can be sufficiently reduced. Dr. Dewees has found it necessary to bleed six or seven times before the disease yielded; and in a case which I treated about six years ago, five copious bleedings were required before an adequate impression was made on the pulse.

Purgatives should be freely used during the active stage of the disease. Dr. Dewees prefers the following mixture for this purpose.* In one instance I used the *magnesia* in union

* R. Sulph. magnes.
Magnesiæ alb. ust. ää ʒiii.—M. Div. in chart. iii. One of these to be taken every two hours, until they operate freely.

with the tincture of *colchicum*, with peculiar benefit. The patient was ordered to take a drachm of magnesia, with thirty drops of the tincture every two hours. After the third dose, free purging ensued; and the result both in diminishing the general phlogistic habit, and mitigating the local symptoms was much more conspicuous, than I had ever before derived from purgatives, or from any other remedy in this affection. I have not since had an opportunity of repeating this practice. In general the purgatives should be of the saline kind.

Diaphoretics, more especially *antimony*, may be employed with considerable advantage in the early periods of the disease, *Tart. emetic*, given in as large doses as the stomach will bear, without causing vomiting, is highly recommended by some writers, and I do not doubt its utility, during the active stage of the complaint. The following mixture forms an excellent diaphoretic, where after decisive blood-letting, there is much general irritation.*

Some writers have recommended emetics; but unless there are especial indications present for their employment, it does not appear that they are capable of procuring any material advantages.

In debilitated and irritable subjects, and *after proper depletory measures*, in the more robust and phlogistic, opium is often highly serviceable to allay the excessive pain and general irritation which usually attend this affection. This narcotic may be very properly given in union with nitre and ipecacuanha; or, what is still better, in the form of Dover's powders, in combination with nitre. It must be particularly observed, however, that opium is in general decidedly objectionable so long as the general and local inflammatory symptoms remain considerable; but in the decline of the disease, its effects are almost always highly soothing and beneficial.

Among the external local remedies employed in this affection, besides the leeching already mentioned, fomentations with flannel, wrung out of hot vinegar and water; the application of a strong solution of muriate of ammonia in equal parts of vinegar and water; and, after the pain, heat, and swelling begin to abate, moderately stimulating lotions—such as camphorated mixture diluted with an equal portion of brandy or whiskey, &c., may be accounted the most beneficial. Some writers strongly recommend the early application of blisters to the groin and to different parts of the extremity; whilst other writers, and amongst these Dr. Dewees, condemn this practice as rarely beneficial, and often decidedly injurious. My own

* R. Pulv. ipecac. compos. gr. xxiv.
Calomel gr. iii.
Pulv. nitrat. potass. ʒi. M. Divide into eight equal parts. S. Take one every two hours.

experience does not enable me to say any thing in favour of blistering in this complaint, although I have never known any manifest harm to result from it. Where the pain in the extremity is very great, much relief may sometimes be obtained by bathing the limb with laudanum, more especially after proper evacuations have been procured. Emollient poultices have also been recommended for the purpose of allaying the pain, as well as assisting in the dispersion of the swelling; but in the early periods of the disease, this application appears to me calculated to do much mischief. The two cases already mentioned as having terminated in extensive suppuration, and ultimately in death, were treated from the commencement with *poultices;* but as all depletory measures were neglected, much of the mischief, no doubt, depended on the want of proper antiphlogistic means. After the fever, heat, and pain, have in a great degree subsided, emollient applications in the form of a poultice may contribute in some degree to the removal of the stiffness and tension of the affected limb; but this purpose is much more effectually answered by frictions with dry flannel; the application of a muslin roller previously saturated with a strong solution of salt and dried, to the whole limb; and fumigations of the extremity with the fumes of burning rosin.

During the febrile stage of the disease, the diet must be of the simplest and weakest kind. During convalescence, the aliment should be digestible and nourishing, and when the patient is left in a very debilitated state, gentle tonics may be administered. If the weather is favourable, and the patient sufficiently recovered, exercise by gestation will be highly beneficial.

FINIS.

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